

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

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CONTENTS

Editorial Comment :	PAGE
Propaganda	237
Hard Luck	238
Parnall "Imp"	239
Private Flying: Easter Light 'Plane Club Meeting	243
"On to Hadleigh"	246
Light 'Plane Clubs	250
Civil Aviation: Air League's First Dinner	251
R.101	252
In Parliament	252
Personals	252
Avro "Avian" for Air Survey	253
Airisms From the Four Winds	254
Royal Air Force	255
High Speed and Trans-Atlantic Flights	256
Royal Aeronautical Society and Inst.Ae.E.	256

"FLIGHT" PHOTOGRAPHS

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2.

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1928

- Apl. 12 "Some Aspects of the Development of the Slot." Mr. G. R. Volkert, before R.Ae.S. and Inst.Ae.E.
- Apl. 14-21 All-American Aircraft Show, Detroit, U.S.A.
- Apl. 26 "The Design and Construction of Modern Rigid Airships." Mr. B. N. Wallis, before R.Ae.S. and Inst.Ae.E.
- May 5 Aerial Pageant, Filton, Bristol
- May 17 Aero Golfing Soc.—Spring Meeting, "Flight" Challenge Cup
- May 28 Light 'Plane Meeting, Hamble
- June 7 7th Annual Middle East Dinner
- June 9 Light 'Plane Meeting, Castle Bromwich

EDITORIAL COMMENT



IN his account of the Lympe Easter Meeting, our representative refers to this as "a meeting that was different." As a matter of fact, in many ways the Lympe Easter Meeting organised by the Cinque Ports Flying Club and that at Hadleigh, run by the Suffolk club, had a charm of their own for the simple reason that they were not too ambitious. That is to say that racing as such was reduced to a minimum, while the carrying of passengers, and exhibitions of "aerobatics" formed the main features of the programme. It might be thought that such meetings would be rather dull affairs. To those who are in and of the aircraft industry in some way or another, and who are therefore somewhat blasé, that may be true. But we are quite sure that the general public did not share that view. Cheap "joy-rides" enlivened by occasional stunt flying prevented the visitors from becoming bored, and as pure propaganda, these two meetings were, we hold, of much greater value than some of the race meetings organised last year.

In organising an air race meeting one is faced by very considerable difficulties. To begin with, handicap racing, in which machines of widely different speeds take part, is never very exciting. With the existence nowadays of so many light aeroplanes of similar power and speed, the obvious remedy would therefore appear to be class racing, without handicapping. This form of air racing undoubtedly has much to recommend it, and from the point of view of the public is probably the most attractive form. But last year's meetings seemed to show that such races, if flown by a sufficient number of machines to make them interesting, were attended by very grave risks to the competitors, chiefly due to the unavoidable "bunching" which must necessarily take place at the turning points. In fact, it is due to these very dangers that we are still mourning the loss of two such popular pilots as Longton and Openshaw. There is just a possibility that this danger can be considerably minimised, if not altogether eliminated, by so arranging the course that very sharp turns are avoided. But in eliminating the sharp turn one does away, at

the same time, with one of the most attractive features of air racing: good cornering. So that altogether the problems of air race meetings are extremely difficult indeed.

But even if the problems can be solved and most of the risks avoided, the question must be asked: Is air racing, at least for large numbers of low powered machines, really good propaganda? Personally we have our doubts. Or perhaps it would be better to say that the propaganda is not quite of the right kind. Air racing means running engines "all out" with consequent hard wear and the possibility of forced landings. While excellent for the purpose of discovering weaknesses, there is a risk that an impression of unreliability may be created. Also, air racing is regarded as something of a stunt. Again not quite the impression one would like to create. A whole day's racing, or possibly even several days of racing, becomes monotonous and, in the end, frankly boring, as we found out at Bournemouth last year. Unless the racing is interspersed with other items, interest is difficult to maintain.

At Lympne and Hadleigh, on the other hand, there was very little racing. In fact, there was practically speaking none. But there was a tremendous amount of "joy riding." Hundreds of people were taken up; many of them probably for the first time in their lives. And almost without exception they stepped from the machines full of enthusiasm for flying. Those who did not go up did at any rate watch the regular ascent and descent of the machines, and must have been impressed by the regularity and the safety with which the proceedings went on. Thus they will go home with a feeling that flying, so far from being a stunt reserved merely for the daring few, is a very ordinary and safe sort of business. And once we can get that feeling really firmly established, we shall have gone a long way towards making the nation "air minded."

Another feature which made the Lympne and Hadleigh meetings so attractive was the spirit of "democracy" which was evident everywhere. Well-known

test pilots, a world-famous racing pilot, and at least one famous aircraft designer who is also an excellent pilot, took their share of the "joy-riding" work, and "did their bit" side by side with private owners holding "B" licences. Firms and private owners had placed the machines at the free disposal of the clubs concerned, and everyone worked with a will towards one common aim: propaganda. We very much doubt whether, since the early days of aviation, anything quite like this has ever occurred in this country. And the general result is, we feel sure, excellent, and will have a lasting effect.

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Hard Luck

Everyone will sympathise most sincerely with the mishap which befell Lady Bailey while she was alighting at Tabora in East Africa on her way from London to the Cape in a de Havilland "Moth," and which, apparently, resulted in the machine being severely damaged, although fortunately Lady Bailey herself escaped injury.

Quiet, unassuming, and modest almost to a fault, Lady Bailey is not only a very good pilot, but a very plucky woman. When, quite early in her career as a pilot, she was struck on the head by a propeller and almost scalped, she was out and about in a very short time, and a little while later actually took part in the air racing at Bournemouth, with her head swathed in bandages. As holder of the light 'plane altitude record (accompanied by Mrs. Geoffrey de Havilland), Lady Bailey has experienced the effects of height and cold, and now on her tour to the Cape she has faced discomforts, to say the least, which have ranged from snowstorms at the start to sandstorms and heat during portions of her journey through Africa. She deserved to win through if ever anyone did, and it is sincerely to be hoped that another machine will be placed at her disposal so that she may complete a journey so pluckily begun. Not only members of the Suffolk club, of which she is President, but all readers of *FLIGHT*, will, we are sure, join us in the expression of that hope.

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Air Mails in 1927

A REVIEW of British air mail services in 1927 shows that both letter and parcel traffic were much heavier during the year. Letter mails despatched from this country totalled 27,000 lb., as compared with 17,000 lb. in 1926, and air parcels 74,000 lb. as compared with 55,000 lb. in 1926. Although no important new routes were opened to Europe, 10,000 lb. of letter mails, an increase of 24 per cent. over 1926, were carried to European destinations during 1927. Germany received the greatest volume; the traffic to France, though considerable, was practically stationary, but greatly increased use was made of the air service to Marseilles on Friday mornings, affording a late connection with the mails for India and the Far East, which leave London on Thursday evenings. The mails to Belgium and Holland showed an increase, and to Switzerland and Scandinavia nearly doubled. The air routes from Paris and Zurich to Constantinople attracted a much greater volume of traffic, though the total was comparatively small. The only decrease was in traffic to Russia. During the year the air mail fee payable on correspondence for Germany and Switzerland was reduced from 3d. to 2d. an ounce. The longer air routes naturally offer the greatest advantage over the ordinary services; for instance, the service from Cairo to Baghdad and Basra, maintained by Imperial Airways under contract with the British Government, enables a letter to reach Baghdad 16 days and Basra 13 days earlier than it would in ordinary course of post. Since early in the year this service has plied weekly instead of fortnightly and the total traffic carried by it during the year was about 13,500 lb., double that of 1926, and greater than that to all European destinations together. In the parcel services, the traffic to Paris was stationary, but that to Holland increased slightly.

The traffic to Switzerland was trebled, and that to Germany nearly doubled. The parcel service with Belgium was reopened during the year, and another service was introduced in Colombia (South America). The latter gives a substantial acceleration over the ordinary route.

First English Aeronaut

ONE hundred years ago, on March 27, James Sadler, the first English aeronaut, died at Oxford. He began experimenting with small balloons filled with hydrogen in 1782 and he made his first ascent in 1784, the flight lasting half-an-hour. The Royal Aeronautical Society has decided to restore his defaced tombstone in the Churchyard of St. Peter in the East, and erect a stone tablet in the Church to perpetuate his memory as the first English aeronaut.

Indian M.P.s in Flight

MOST of the members of the party of the Legislative Assembly visiting the North-West Indian Frontier last week made flights over Peshawar in a Bristol Fighter.

Easter Air Traffic

IMPERIAL Airways state that this Easter they had the biggest traffic rush in the history of commercial aviation. Every available air liner of their fleet was in full use, one making three flights between London and Paris on April 5.

Busk Studentship in Aeronautics

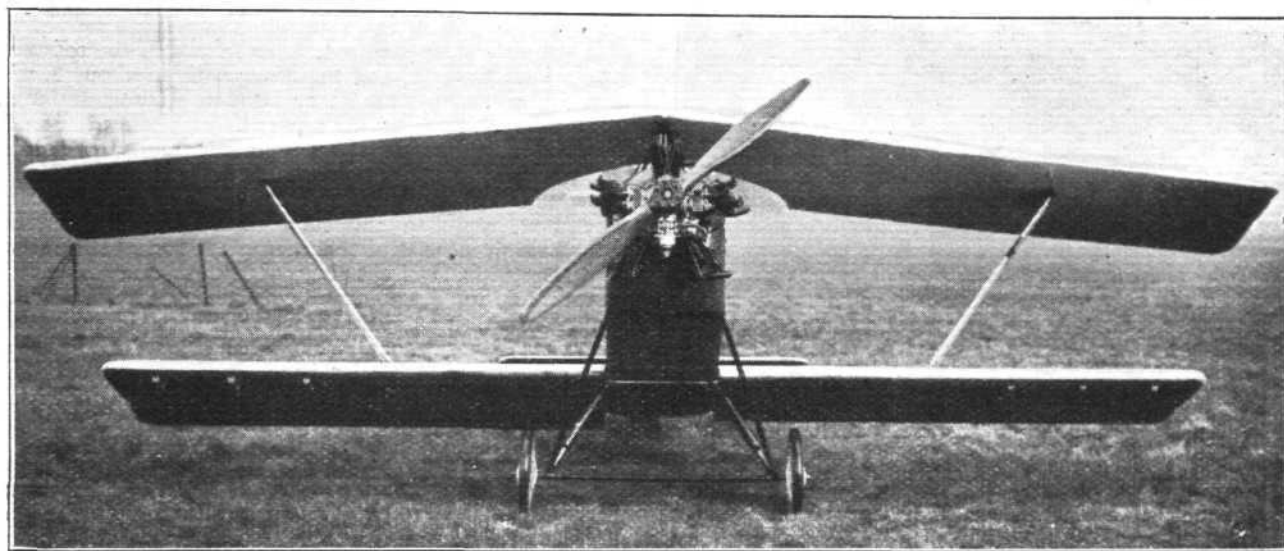
THE trustees of the studentship established in memory of Edward Teshmaker Busk, who lost his life flying an experimental aeroplane in 1914, announce they are prepared to receive applications for the studentship. Particulars and the necessary forms can be obtained from Prof. B. Melville Jones, Engineering Laboratory, Cambridge.

THE PARNALL "IMP"

A New British Light Aeroplane with "Genet" Engine

In designing the "Imp," photographs of which were published in *FLIGHT* of March 29, 1928, Mr. Harold Bolas, George Parnall's chief designer, had two outstanding fundamental aims in view, simplicity and good view. An examination of the "Imp" shows that he has attained these objects. With its entire absence of wire bracing (and consequent avoidance of any need for ever trueing-up the machine once it has been assembled), its all-wood construction, and general weatherproof qualities, the "Imp" is simple enough in all

The wing section employed is a modified R.A.F. 31, i.e., a fairly thick section, with its centre line curved to a medium camber. The wing arrangement chosen made a fairly thick section necessary, since the lower wing is a cantilever and has, in addition to its own load, to carry the load of the unbraced hinged upper wing. The lower wing is made in one piece, with a span of 21 ft. 6 in. and a chord of 4 ft. The upper wing is built in two halves, hinged to a central *cabane* of streamline steel-tube struts, and the load is transmitted



["FLIGHT" Photograph]

THE PARNALL "IMP": Front view. The engine is an Armstrong-Siddeley "Genet." By removing the top plane, cabane and struts, the machine can be converted into a low-wing, cantilever monoplane.

conscience. And the view is probably very nearly as good as it is possible to obtain in an aeroplane of the tractor type. At the same time, the performance is approximately the same as that of other and more orthodox designs of the same power and load-carrying capacity. Put as briefly as possible, the two main objects of the design, simplicity and good view, were obtained respectively by making the wings as cantilevers, wood-planked, and by giving the top plane a pronounced sweep-back. The latter feature is clearly visible in the photographs, and particularly in the scale drawings.

Wing Design

As the biplane wings are the foundation of most of the unusual features of the "Imp," they will be dealt with first.

via one interplane strut on each side. As the lower wing is a cantilever, while the upper is hinged, it will be seen that as far as pure bending is concerned, the inter-plane struts are tension members. With fore and aft movement of the centre of pressure, however, the struts are also called upon to act as compression members, and thus are designed to fulfil both functions.

Constructionally the wings are unusual, in that they have been designed in such a manner as to utilise the skin or planking as the chief stress-resisting member. In doing this, it seems likely that a slightly greater wing structure weight per square foot is entailed, but for the price thus paid is obtained a wing of exceptional torsional rigidity, and a wing,



["FLIGHT" Photograph]

THE PARNALL "IMP": Three-Quarter rear view. Note that both cockpits are clear of the top trailing edge, and that thus the view is very good.



[“FLIGHT” Photograph]

THE PARNALL “IMP” WITH ARMSTRONG-SIDDELEY “GENET” ENGINE: This aerial view, taken from a “Moth” kindly lent by the Wessex Club and piloted by Mr. Bartlett, the Club Instructor, gives a good idea of the unusual arrangement of the wings. On this occasion the “Imp” was piloted by Mr. Harold Bolas, its designer.

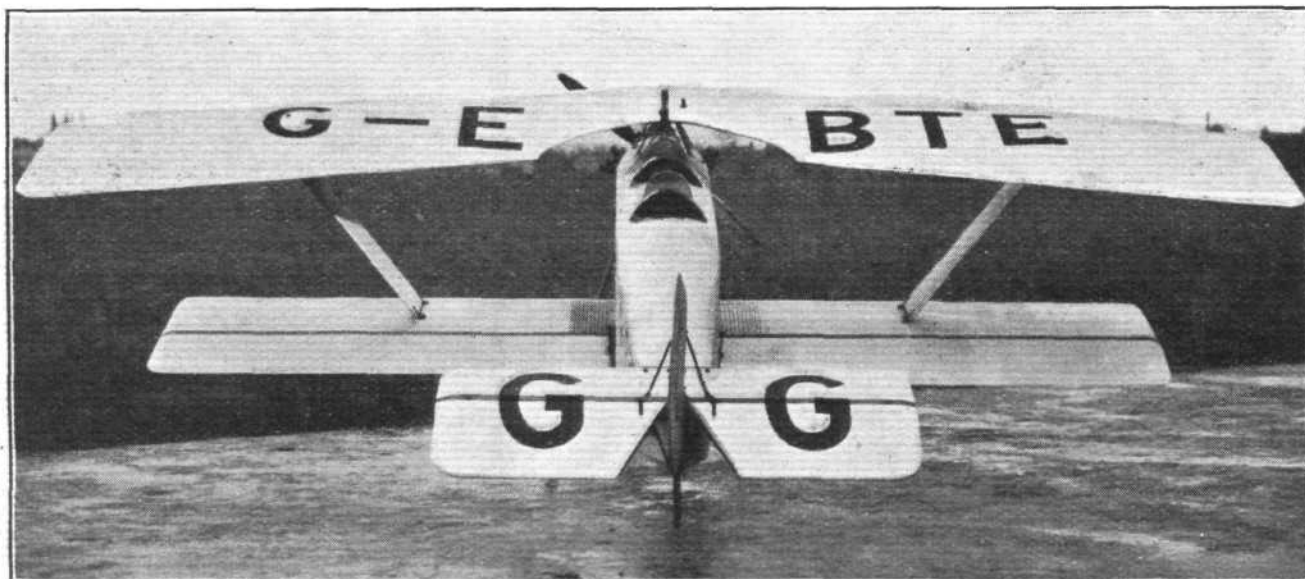
moreover, which is to all intents and purposes weatherproof, as it does not depend upon doped fabric but has a wooden skin protected by paint. In point of fact, doped fabric as usually understood is entirely absent. A fabric covering is used, but it is not doped on, nor is it finished off with the usual pigmented dope, but with ordinary paint.

In order to make full use of the skin as the main load-bearing structure of the wing, a somewhat unusual construction has been developed. In place of the usual two-spar internal structure, there are in the “Imp” a number of light stringers, whose function is to resist shear and not bending. In place of the usual ribs there are formers of the external shape of the aerofoil section. The skin itself is a spruce veneer, and is tapered in thickness according to the location in the wing. Furthermore, the spacing of the ribs is proportioned to the local stresses in such a way as to enable the skin to stand up to its compression loads without secondary buckling. It will be realised that a wing of this design is not amenable to ordinary stress calculation, and a series of tests have been carried out to determine the most economical spacing of ribs and the best thickness distribution in the skin. As a matter of fact, the resulting wings have proved a good deal stronger than required. For instance, the top wing has a factor of about 12, and the lower wing of about 8, which is higher than deemed necessary even in a single-seater fighter of more than six times the power!

One feature of the “Imp” wing arrangement will doubtless be criticised by some: there is no provision made for folding the wings. Mr. Bolas has a rather convincing, and certainly very neat, reply to any such objection. “One gets,” he says, “much more shed than aeroplane for a pound sterling.” In other words, it is better economy to spend the extra cost of any folding arrangement on increased shed space. A hangar, Mr. Bolas argues, if it is to be large enough to enable the owner to work around the machine in the folded condition, will be very little smaller than one large enough to house the machine erected. The time has not yet come when the private owner of an aeroplane can keep his machine in a small shed in his garden, and in any case, a fairly large field is still necessary for taking off and alighting. That being so, ground space for a hangar is not a serious consideration, and there remains only the question of the extra cost of the slightly larger hangar, which is met by the dictum quoted above. That, in brief, is Mr. Bolas’s argument, and certainly there is a good deal of common sense in it.

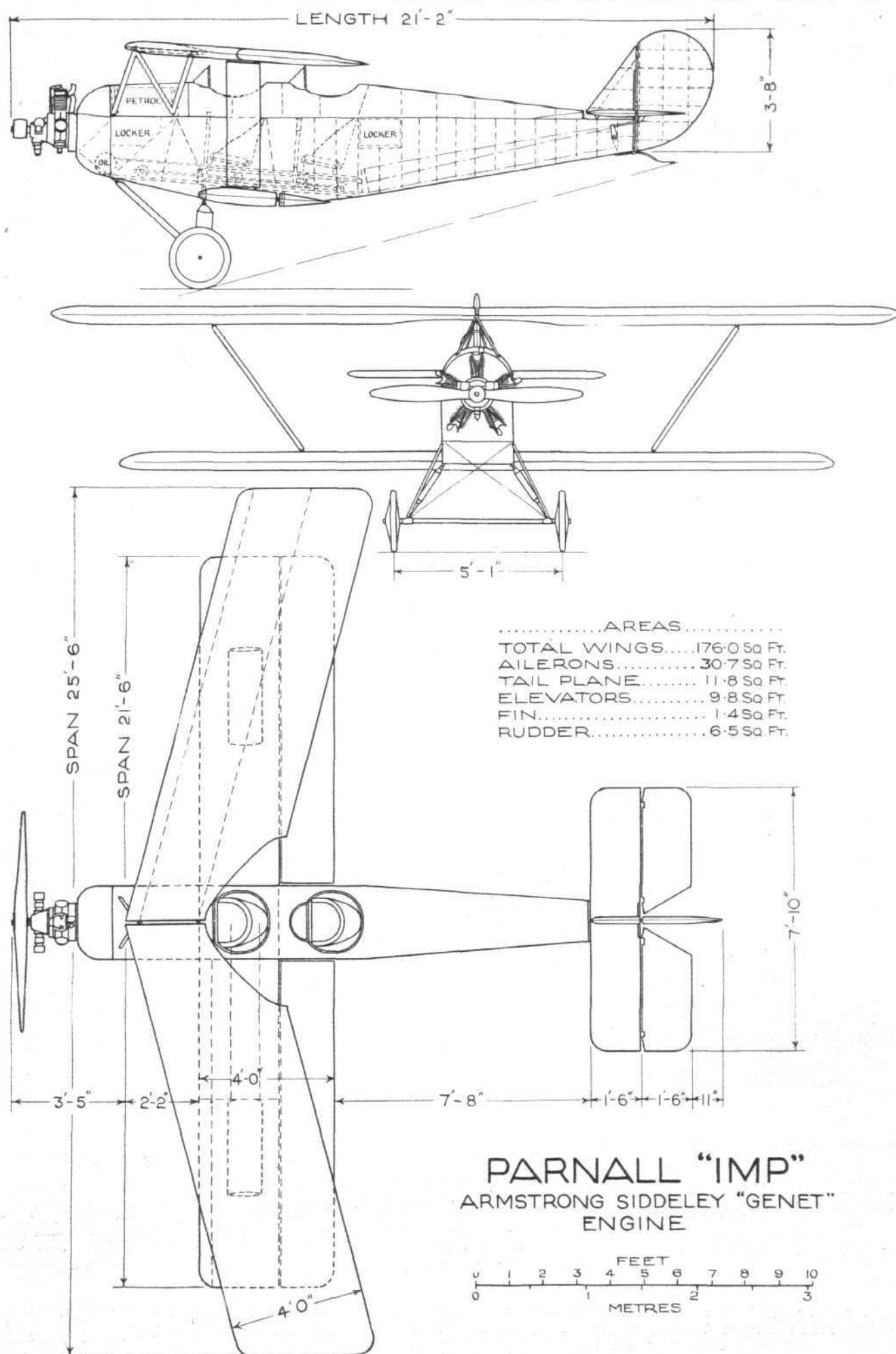
The time when wing folding is really an advantage is after a forced landing in a field. But Mr. Bolas contends that when, after such an event, the machine has to be pushed through a gateway, there will usually have gathered quite a number of people, and as the wings of the “Imp” can be dismantled in about two minutes by two people, the loss in time is not likely to be of any consequence. At present no provision has been made for carrying the dismantled wings on the fuselage, but this will be done in future machines.

The one-piece lower wing rests in a cut-out in the bottom of the fuselage, and quick-release fittings are used for securing it in place and for disconnecting the aileron controls. The procedure of dismantling the wings is as follows: One man supports the upper wing tip, while a second releases the strut attachments to the lower plane. The strut can then be laid flat along the under side of the top plane,



[“FLIGHT” Photograph]

THE PARNALL “IMP”: Rear view. The raked inter-plane struts transmit the lift from the top plane to the lower, cantilever, wing. Ailerons run the whole span of the bottom plane.



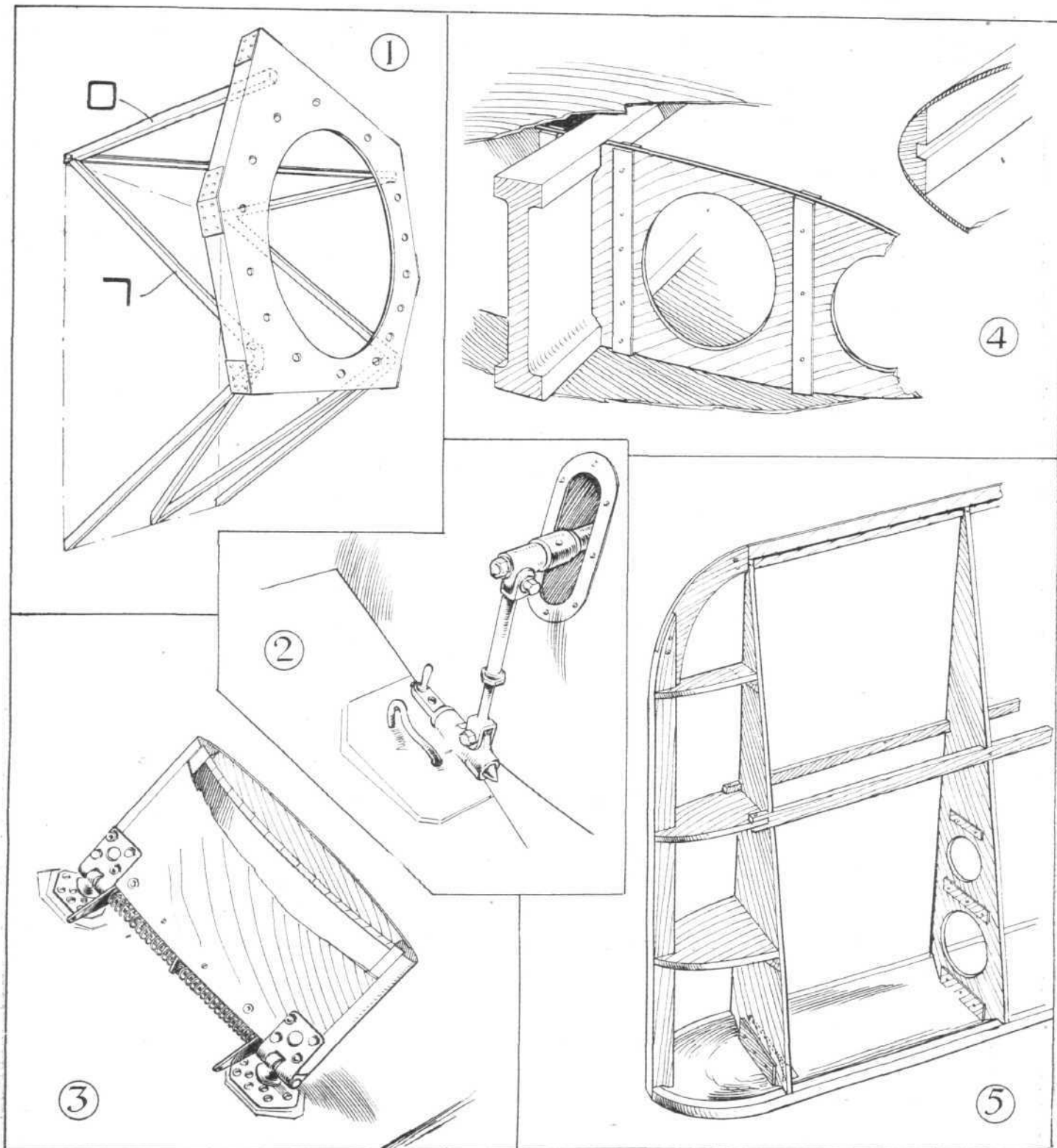
THE PARNALL "IMP" : General Arrangement Drawings.

where it is held in position by a pin through a small fitting. The man on the wing tip now lowers this slightly, when the second man releases the hook attachment to the *cabane* and the one half of the top plane is carried away. The process is repeated for the other half.

The lower plane has, as we have said, quick-release attach-

their sockets, and the plane is then free of the fuselage and can be carried away. The erecting of the wing is carried out in the reverse sequence.

Ailerons are fitted to the bottom plane only, and run the whole span, chiefly in order to simplify the quick-release control attachments.



[" FLIGHT " Copyright Sketches

THE PARNALL "IMP" LIGHT AEROPLANE : Some Constructional Details. The engine plate is supported on a system of square tubes and angle sections, as shown in 1. The quick-release attachment of the aileron controls is shown in 2, while 3 illustrates the attachment of the interplane struts to lower plane. The same sketch also shows the general construction of the strut. The wing construction, consisting of false spars or stringers, and ribs or formers, with spruce planking, is indicated in 4, and the aileron and elevator construction in 5.

ments to the fuselage at what would normally be the location of the rear spar. These are released first. When this has been done, the lower wing is prevented by a spring from falling down. The two persons catch hold of a wing tip each, and press the wing backwards against the spring. After a backward movement of a little more than an inch the two pins in the front of the bottom plane come out of

The fuselage is of orthodox construction, with a light skeleton of spruce, covered with ply-wood. It is, of course, flat-sided, and has a flat bottom, but a cambered deck fairing in the usual way. The top longerons are placed rather higher than in some machines, *i.e.*, the deck fairing forms a smaller percentage of the overall fuselage depth, and
(Concluded on page 256)

PRIVATE



FLYING

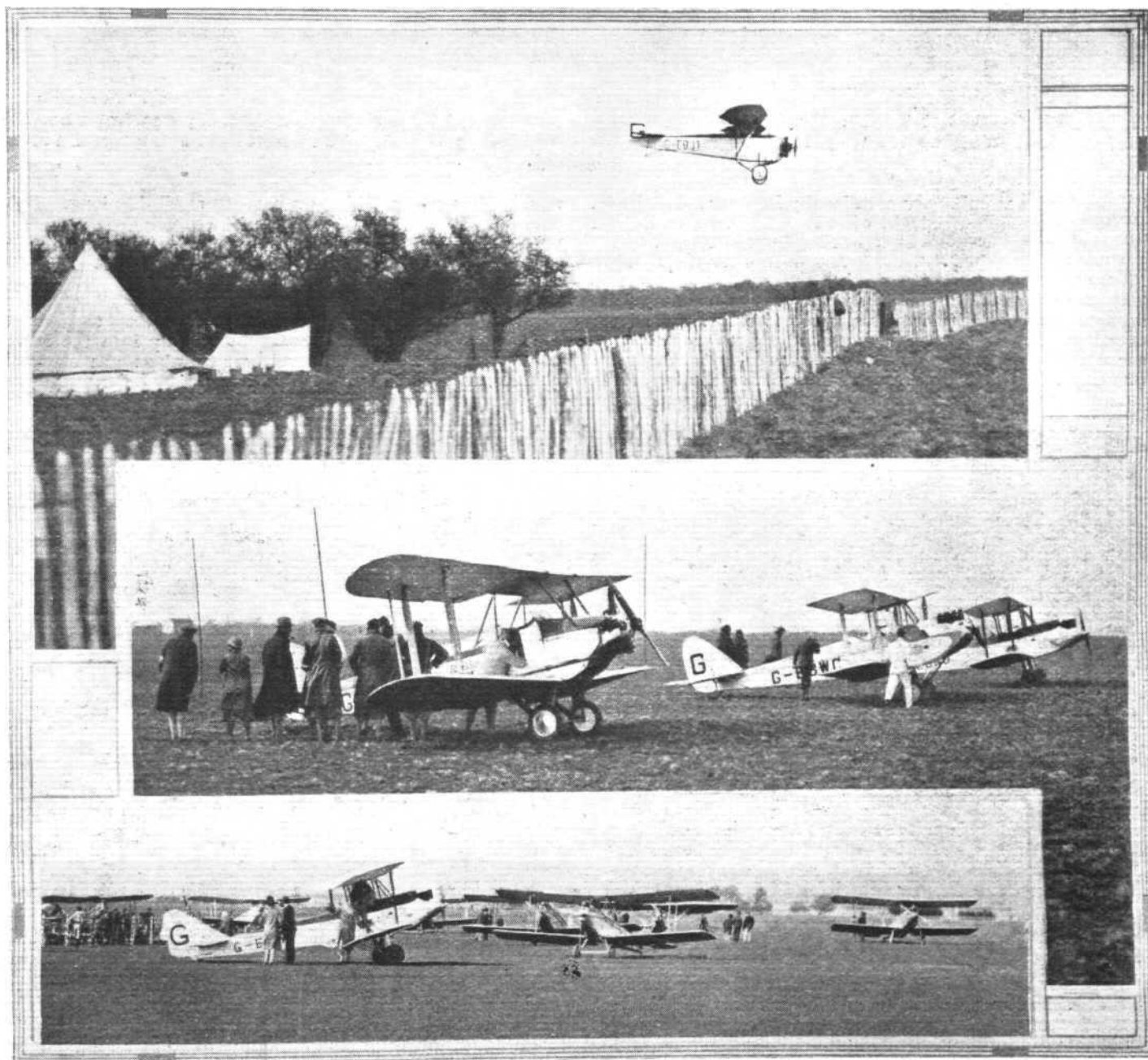
A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

THE EASTER MEETINGS

Cinque Ports Flying Club Success

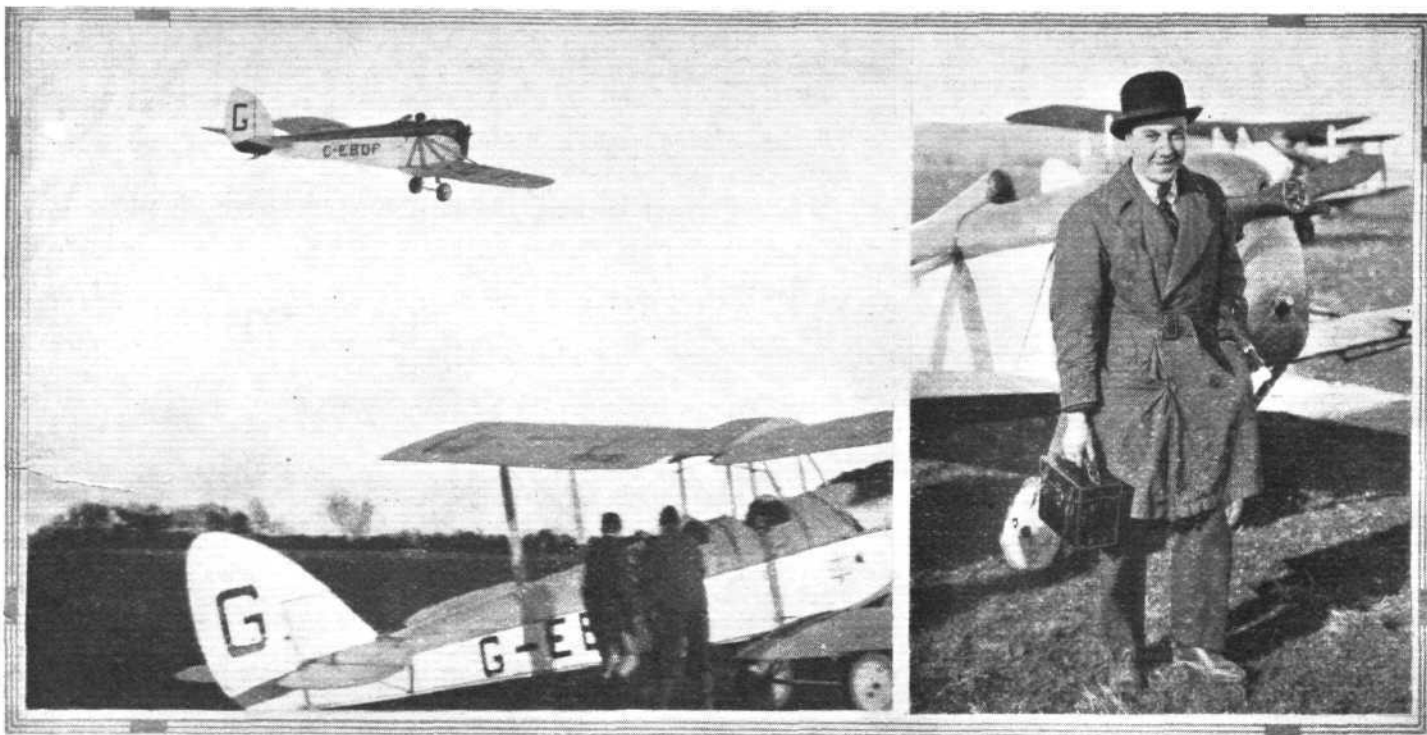
"A MEETING that was different." Thus might, perhaps, be summed up the two-days' meeting organised by the Cinque Ports Flying Club at the Lympe aerodrome on Good Friday and Easter Saturday. The meeting was "different" in that there was no racing, in the usual sense of the term, but merely "joy-riding" and "aerobatics" demonstrations. In other words, the Lympe meeting was frankly organised to make a certain amount of money for the Cinque Ports Flying Club, and at the same time to increase "airmindedness." We have not the exact results in £ s. d., but the attendance,

at least on Food Friday, was such that the club must have profited to a considerable extent, while on both days the number of "joy-riders" was very large. On Good Friday it was reported that something like 350 passengers had been carried. Incidentally, there was a story going around, which we failed to verify, but which may well be true, to the effect that one "joy-ride" passenger was dissatisfied, claiming that the two circuits of the aerodrome were not good enough value for his 5s. The pilot, so the story goes, then invited him to climb on board again, and gave him a flight in which



"FLIGHT" Photographs

AT THE LYMPNE EASTER MEETING: Below, a few of the machines which helped to create "airmindedness." In the centre, the line-up for the "Manufacturers' Race." At the top, Dr. Whitehead-Reid coming in to land on his Westland "Widgeon II" with "Genet" engine



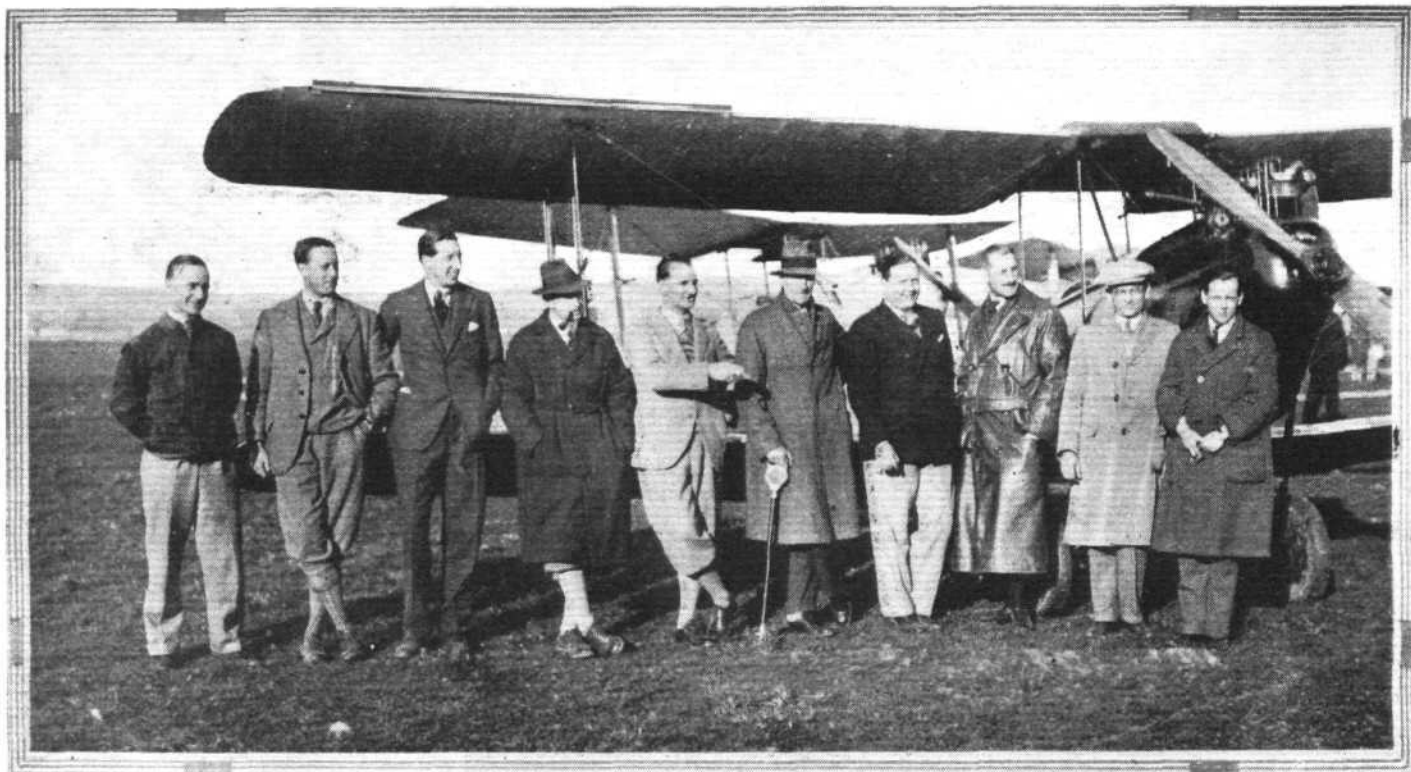
["FLIGHT" Photographs]

A LITTLE COMIC RELIEF : Mr. Cousins caused much amusement by arriving in a D.H. 53, wearing a bowler hat, which he raised as he flew past the enclosures. On the right he is seen with attache case and umbrella after alighting.

the machine was only very occasionally in a normal attitude. What the passenger thought of it is not known, as he was reported to be incapable of expressing himself coherently!

Very briefly explained, the arrangements for the Lympne Easter Meeting were that manufacturers and private owners lent their machines free of charge. Pilots holding "B" licences gave their services free, and the club provided the petrol and oil for the engines, and took the fees for the passenger flights. As a consequence, one saw famous test pilots like Capt. Broad, Sqdn.-Leader England, and many others,

working like slaves taking up passengers all day long. It is doubtful if most of the "joy-riders" appreciated the honour which they were thus shown, but that the whole thing was very excellent propaganda there can be not the slightest doubt. It should be made clear, of course, that the "joy-riding" was not confined to test pilots. Every pilot holding a "B" licence was hard at work, and among them were several private owners, who fell thoroughly into the spirit of the thing and did their level best to take up as many as possible, so as to "spread the gospel."



["FLIGHT" Photograph]

"MOTH'ERS" AT LYMPNE : A group of "Moth" pilots in front of Mr. Nigel Norman's machine, the first privately-owned aeroplane to be fitted with automatic slots. From left to right : Mr. Norman Jones (WI), Mr. Muntz, Mr. Norman (WY), Sq. Ldr. England (WS), Capt. "Jerry" Shaw (QE), Capt. de Havilland, the father of all "Moth's" (PU), Mr. Malcolm (NC), Mr. Burt, Mr. Irving (of parachute fame), and Capt. Broad.

On Good Friday, the programme did not commence until 2 p.m., but long before that hour visitors arrived in their thousands, by motor car and motor cycle, by char-a-bancs, by train to the nearest railway stations, and on foot. The day was bright, with blue sky, sunshine, and south-westerly wind, and the number of machines on the aerodrome was constantly augmented by new arrivals. Among these was Capt. Geoffrey de Havilland, with his eldest son, who was flying Lady Bailey's "Moth," G-EBPU. Climbing to about 4,000 ft. over Stag Lane aerodrome, "D.H." set a compass course for Lympe, flying over London en route, and hit the aerodrome "right on the bowsprit" as the yachtsmen have it. Another arrival during the morning was Sqdn.-Leader England, on "Moth" G-EBWS, on which he is shortly starting a tour of the Continent for the purpose of demonstrating the Handley-Page automatic slot. The "Moth" is fitted with these, and England was busy demonstrating the action of the slots during the two days' flying. (Possibly the "WS" of the identification letters are intended to indicate "wing slots").

Mr. Norman Jones, who last year attended a number of meetings on his little A.N.E.C. monoplane JO, turned up in a very bright "Moth" (G-EBWI), painted maroon and yellow. If the "Moth" looked a little "new," there was nothing of the novice about Jones's piloting. He now handles his machine extremely well, and is becoming a very good pilot, his landings particularly being as near perfection as doesn't matter.

Among the private owners who arrived on their "Moths" was Mr. Nigel Norman (on G-EBWY), whose machine has the distinction of being the first privately-owned aeroplane to be equipped with the automatic slots.

Dr. Whitehead-Reid has bought the Westland "Widgeon II," with Armstrong-Siddeley "Genet" engine, and during the afternoon he was handling it with great skill, doing loops, etc., on it, in spite of the fairly gusty wind. With its small wing area, this machine is very fast, and forms a very good type for the private owner who wishes to be able to do a bit of racing occasionally.

By far the greatest proportion of machines on the aerodrome were "Moths," of which we counted no less than 13 during Good Friday, the "odd man" being Lieut. Soden's "Genet Moth" OU, the other 12 being standard "Cirrus Moths." A "Moth" lorry was in attendance, and two engineers in white overalls with the name "Moth" on the breast were busy looking after the needs of "Moth" pilots. As usual,



["FLIGHT" Photograph

SLOTS AND "MOTHS" : Squadron-Leader England is starting shortly on a demonstration tour of the Continent, and will use a "Moth" fitted with Handley Page automatic slots.

the "Moth" organisation was excellent, for which possibly the presence on the aerodrome of Mr. St. Barbe and Mr. Ballantyne was mainly responsible.

Second in numbers came the Avro "Avians," of which some half-dozen were on the aerodrome during Friday. Some of these were brought over by Avro pilots, others by their owners. Among the "Avian" pilots was Captain H. A. Brown, who has now joined Avro's "Avian" sales department, and also acts as test pilot to the firm after Hinkler's departure for Australia. Captain G. F. Lines, of British Airships, Ltd., piloted that firm's "Avian" (G-EBWU), and quickly became known at Lympe as "Mr. Wu."

Of Westland "Widgeons," apart from Dr. Whitehead-Reid's, there were two: G-EBRO, piloted by Mr. Penrose, and G-EBRM. The Blackburn "Bluebird" was similarly represented, the two being G-EBTA and G-EBTB.

"Joy-riding" commenced at 2 p.m., and continued briskly during the afternoon. About the time the first exhibition of "aerobatics" was scheduled to commence, a D.H. 53 made its appearance. The pilot was wearing what at first appeared to be an entirely new style in crash helmets, but as he flew past the enclosures he was seen repeatedly to raise his "helmet," which turned out to be a bowler hat! When he landed, he stepped out of his machine complete with umbrella and attaché case. It turned out to be Mr. Cousins who had borrowed Lieut. Scroggs' D.H. 53 (Bristol "Cherub") and had adopted this method of demonstrating that flying does not necessarily involve special flying kit.

Fairly late in the afternoon, Captain Broad gave an exhibition of stunting on "Moth" G-EBWC, his low loops particularly enthralling the spectators, although the peculiar stunt of doing a half-loop which turns into a roll and finishes as a spin, is certainly a much more difficult manoeuvre. Captain Neville Stack arrived a little later on, his white "Moth" G-EBUF, and gave a demonstration of "skating" across the aerodrome on the side of the fuselage. He was uncomfortably close to the machines standing in front of the enclosures, but otherwise gave a good show. A Gloster "Gamecock" came over and gave a fine exhibition of stunting.

On Easter Saturday, the wind had changed around to the east, and it was very cold on the aerodrome, which may have accounted for the fact that the attendance was not nearly as great as on the previous day. As usual, "joy-riding"



["FLIGHT" Photograph

Capt. H. A. Brown has now joined Avro's "Avian" sales department as demonstrator, and is also the firm's test pilot.

and exhibition flights were the order of the day. Additional interest was, however, created by a couple of races and an altitude-guessing competition.

The first race was for manufacturers in that one of each of the four types of machine ("Moth," "Avian," "Widgeon" and "Bluebird") was to take part, the "race" consisting in a start from scratch, flying to Summer House Hill and back, alighting, folding the wings and pushing the machines between posts, spreading the wings and fly off to the same turning point and return to the aerodrome, the first machine back being the winner.

For some reason, the "Widgeons" did not take part, and the race became one between Capt. Lines on "Avian" WU, Captain Broad on "Moth" WC, and Captain Blake on "Bluebird" TA. The passenger had to start the engine, jump in, and the machines were off. Broad and his passenger got away a few yards ahead of the "Avian," with the "Bluebird" last. On returning from the turning point, Broad was well in the lead, and quickly had his wings folded,

the machine pushed between the post, the wings spread and off again. The other two competitors abandoned the race on returning to the aerodrome, somewhat to the disappointment of the spectators, who had expected them to be good enough sportsmen to continue, even if the position was fairly hopeless, and thus Broad had a walkover. He flew splendidly and deserved his win, although the retirement of the other machines spoiled the race. Incidentally, Broad must have been in great pain during the last part of the race, as he burnt his fingers rather badly on the hot exhaust pipe while spreading the wings.

The last event on the programme was an "All forms of transport race," in which competitors had to run 100 yards, cycle 100 yards, motor a quarter of a mile, start up their engines, and fly to Summer House Hill and back. This race was run in two heats and a final, the winners of the heats being Squadron-Leader England and Captain Broad, who thus fought out the final, which resulted in a win by about three yards by England. Both were mounted on "Moths."

THE HADLEIGH RALLY

Suffolk Aeroplane Club's Fine Display

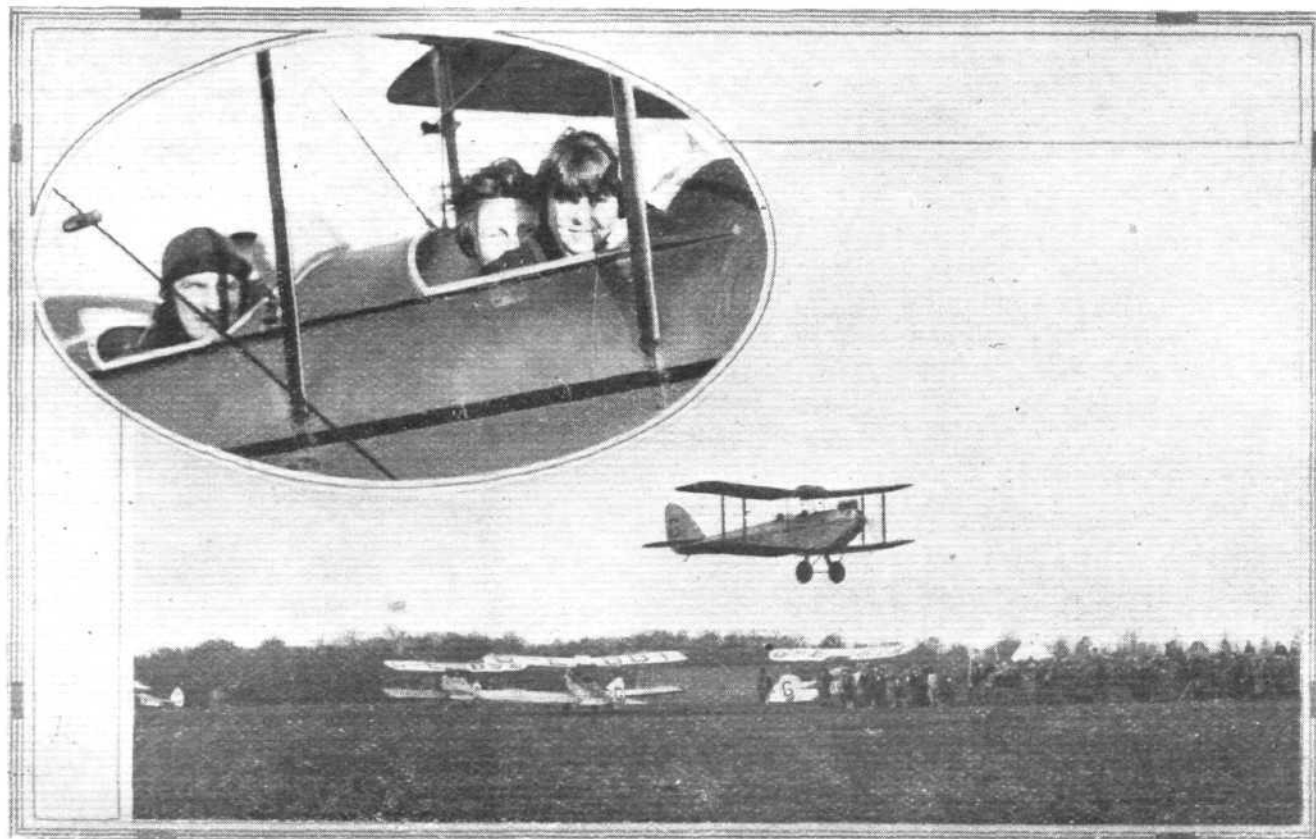
THE blanket of grey cloud which usually spreads over our Island was mercifully lifted at Hadleigh aerodrome, Suffolk, during the Easter, and we had two of the brightest days this year. Such extraordinary meteorological behaviour put everyone in a state of constant mild surprise, so that the chief topic at the meeting was the weather. Of course, we shall have to pay for it. The surprise was more acute because the weather experts' theory had led one to expect at least a gale. Only on Monday morning did the suggestion of a relapse occur, when the sky was a mottled grey, and threatening in some directions, but sunshine dispersed the clouds triumphantly to the end from about noon.

A fresh breeze blew across the aerodrome most of the time, and gradually increased, but so gradually that it finished up quite harmless. It was bumpy in the air in patches.

The chief flying event of the meeting was joy-riding. The demand for the 5s. flights was so persistent that it could not be entirely met despite generous voluntary services given by most of the visiting pilots.

On both days there was a fine array of machines present, and it was gratifying and just that the public showed its appreciation of the work of the Suffolk Aeroplane Club and its supporters by patronising the air show in large numbers.

Most of the machines had come on from the Lympe meeting, which had taken place on the preceding two days. A few did not stay for Monday, but newcomers arrived to maintain an average attendance of approximately twenty aeroplanes, which, with two exceptions, were light aeroplanes. This good muster of small machines, making a fairly large meeting without the expansion of the larger type, thus reflected how this branch of the aviation industry



"FLIGHT" Photographs

JOY-RIDING AT HADLEIGH : Much to the satisfaction of the Suffolk Club, the public clamoured for joy-rides at 5s. per flight; in fact, although the numerous visiting pilots gave their services generously, it was found impossible to satisfy all demands. Without a doubt, Capt. "Jerry" Shaw did as much joy-riding work as anyone. His golden D.H. "Moth" named "Arom," which he flies for the Shell-Mex Company, here seen taking off just over the corner of the aerodrome, where the joy-riders were waiting, was in the air all day. Inset, shows Capt. Shaw with two little girl passengers whom he took up at the Lympe meeting on the preceding day.

s progressing. The two exceptions were a Boulton and Paul P9, which dropped in on Monday afternoon, and an antique machine in the form of a B.E.2c.

When the latter first appeared in the sky heading for the aerodrome its difference in wing span in favour of the top wing first signalled its strange breed, and then when it revealed its pronounced forward stagger, deep gap and the particular clatter of its R.A.F. engine, it was recognised. When it landed it was inspected with amused curiosity, particularly its abundance of wires. The bottom wing seemed to have a strange elasticity. However, it clattered about the aerodrome quite interestingly, with its skilful pilot and passenger. According to our last list of private owners, it belongs to Pilot Officer T. H. Carr.

Mr. Courtney N. Prentice, the Suffolk Club's Hon. Secretary, and only member with a "B" licence, and the club's instructor, Mr. G. E. Lowdell, A.F.M., flew the club's two Blackburn "Bluebirds" during the meeting, and put in strenuous hours. Mr. Prentice was a war-time pilot, part of his experience being on the Blackburn "Kangaroos," which patrolled the North Sea, off Seaton Carew, if we remember rightly. He decided to purchase a private machine about two years ago when visiting an air meeting at Lympe with his wife. The insurance costs, however, were heavy, and to lighten them he got other enthusiasts to join in the responsibility. This fusion eventually started the Suffolk Club.

Mr. Lowdell, the instructor, gave his services voluntarily at first, filling in all his spare time at Hadleigh after his duties with the Royal Air Force at Martlesham Heath. When the club was firmly established he was justly given the permanent position and he then left the Air Force.

Visitors

The visiting pilots included many private owners. There were Mr. Nigel Norman, in his slotted-wing D.H. "Moth," G-EBWY, with Dr. Whitehead Reid as passenger; Mr. Norman Jones, on his D.H. "Moth," G-EBWC, named "Camberwell Beauty"; Mr. R. G. Cazalet, on his Westland "Widgeon III," G-EBRM, with Flight-Lieut. Rose, the Midland Club instructor, as passenger; Dr. G. Merton, on his D.H. "Moth," G-EBQZ; Flight-Lieut. F. O. Soden, on his "Genet-Moth," G-EBOU; Miss W. E. Spooner, on her D.H. "Moth-Mk. I," G-EBOT; Miss S. O'Brien, on her D.H. "Moth Mk. I," G-EBOS; Flight-Lieut. N. Comper, on C.L.A.4, G-EBPB; Mr. F. P. Raynham, Avro "Avian," G-EBWW, with passenger; Mr. G. Linnell, D.H. "Moth," G-EBSA; Mr. L. G. Richardson, D.H. "Moth," G-EBPO; and Capt. S. Burt on D.H. "Moth," G-EBTI. Mr. Mitchell, of Yeovil, was also present.

The industry was represented by Capt. N. Stack on the A.D.C. Aircraft D.H. "Moth," G-EBUF; Capt. M. Blake, the Blackburn Aeroplane Company's test pilot, on Blackburn "Bluebird," G-EBTB; Mr. J. Stockbridge, instructor at the R.A.F. Reserve School at Brough aerodrome, on Blackburn "Bluebird," G-EBTA; Capt. A. S. White, with Mr.



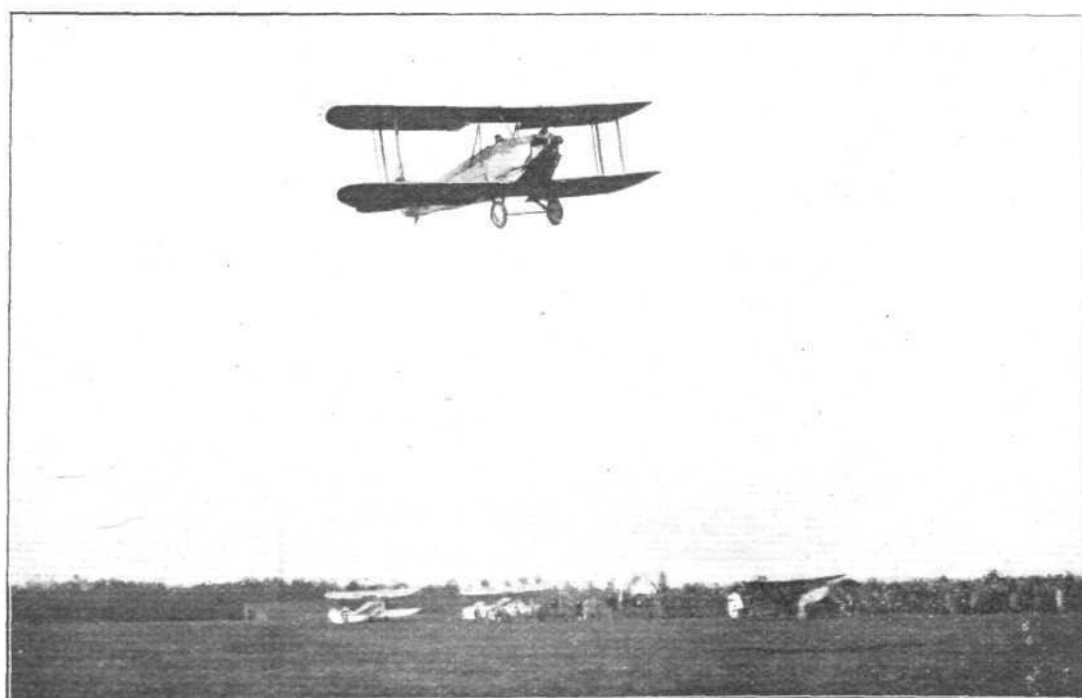
"FLIGHT" Photograph

A CELEBRITY AT HADLEIGH: The crowd at the Hadleigh Air Meeting was pleased by the presence of Filt.-Lt. S. N. Webster, the winner of the last Schneider Trophy, who visited the aerodrome both days. He helped the Suffolk Club most effectively by doing joy-riding in the Blackburn "Bluebird." For the honour of accompanying him the public paid double the normal charge.

Ballantyne, on D.H. "Moth" G-EBRY; and Mr. Malcolm with Mr. Elliott, on D.H. "Moth," G-EBNO, represented the De Havilland Company; Sqdn.-Leader T. England, the Handley Page Company's test pilot, was on slotted-wing D.H. "Moth," G-EBWS; Mr. Penrose, of the Westland Aircraft Company, brought over a Westland "Widgeon III," G-EBRO; and the British Airships, Ltd., pilot, Capt. Lines, flew the company's Avro "Avian," G-EBWU.

SUNDAY'S EVENTS.

Exhibition Flying.—The first event on the opening day was an exhibition flight on the Club's two Blackburn "Bluebirds," flown by Mr. C. Prentice and Mr. G. Lowdell, respectively. There were not many in the public enclosure at the time, and the display really began to liven up with the arrival



"FLIGHT" Photograph

Suffolk Club's Air Race: There was a good race for the Suffolk Handicap over a course of 21 miles on Monday afternoon. Five machines entered, and in this picture we see the Blackburn "Bluebird," flown by Capt. Blake, getting well away 2 mins. 22 secs. after Miss Spooner, who won the race. Capt. Blake unfortunately got confused with the turning points and, therefore, came in fourth.



PERSONALITIES AT HADLEIGH:—(Top Left) Mr. R. G. Cazalet and Flt.-Lt. Rose, who won the "On To Hadleigh" Rally in the former's Westland "Widgeon." (Top Right) Dr. James Sleigh (facing), Chairman of the Club, chatting with the Mayor of Ipswich, Mr. Rowley Elliston, who is a patron. (Bottom Left) Miss Sylvia Edwards, the Club's first lady soloist, who demonstrated the Blackburn "Bluebird." (Bottom Right) The instructor, Mr. G. E. Lowdell.



["FLIGHT" Photograph]

THE SUFFOLK CLUB'S DISPLAY : A most interesting machine which visited Hadleigh was Pilot Officer T. H. Carr's private machine, a B.E.2c, G-EANW, here seen doing crazy flying before the crowd. It was subjected to considerable inspection by the pilots, many of whom could recall their first flights on the B.E. machines during the war.

of the visiting aircraft, later, engaged in the "On to Hadleigh" Rally. The miles each machine had flown to the aerodrome in a straight line were divided by the number of minutes before or after 11.30 a.m. at which they crossed the finishing line. This calculation gave the number of points gained by each competitor. The first prize was £10; second, £7 10s.; and third, £5. The winner proved to be a private owner, Mr. R. G. Cazalet, who flew his Westland "Widgeon," in which he was accompanied by Flt.-Lt. Rose. They had flown from Lympne and crossed the line 15 secs. before zero hour, 11.30 a.m. Captain Blake, on the Blackburn "Bluebird," was second, and two D.H. "Moths" tied for third place.

Apart from machines constantly arriving in the morning, in deference to the wishes of local churchpeople no programme was carried out during church hours.

Aerial Light Car Demonstrated.—This was the second event, beginning soon after noon. Miss Sylvia Edwards arrived on the field towing a Blackburn "Bluebird" behind her car. She then spread the wings, started up, and took off, accompanied on her flight by a lady friend, "Miss Nancy Lowdell." Miss Edwards is the Suffolk Club's first lady soloist and is ready to take her ticket. She went solo after only five hours' instruction and is now keen to possess her own machine. She lives a considerable distance from the aerodrome, which is the case with many of the club's most enthusiastic supporters.

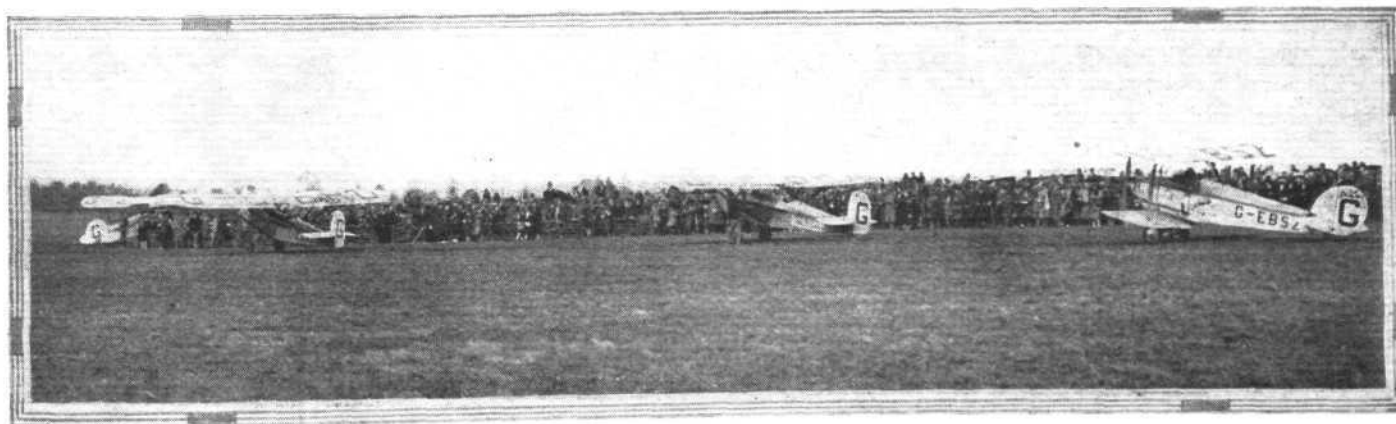
Upside - Down Flying.—Most flying club instructors are naturally very versatile pilots, to whom practically any

aerial manoeuvre is easy. Mr. G. E. Lowdell is no exception. He is an expert who compels you to watch him although you may have been watching good flying all day. On the Blackburn "Bluebird" his performances may seem more fascinating because this light aeroplane looks heavy. He reveals how easily manoeuvrable it is, and destroys any illusions that it lacks versatility. The third event was an exhibition of upside-down flying by him. Climbing to a fair altitude, though not too high to obscure his manoeuvre, he dived the machine on to its back and flew nearly the length of the aerodrome upside down.

Light 'Plane Demonstration.—In the afternoon one of the first items was a flying demonstration of the four types of light aeroplanes. Mr. F. P. Raynham performed on his Avro "Avian," which has been fitted for air survey work. Shortly he is taking it to India for six months to carry out a survey contract. The D.H. "Moth" was flown by Capt. A. White, of the D.H. School; Capt. Blake took up the Blackburn "Bluebird" and Mr. G. Lowdell the Westland "Widgeon."

The Slotted Wing.—Most interesting was Sqd.-Ldr. T. England's demonstration of the slotted wing on D.H. "Moth" G-EBWS, in which he flew to the meeting on both days. The machine repeatedly settled down gently just clear of the crowd and enabled them to see a controlled stall clearly.

Meanwhile joy-riding went on continuously, and one or two minor events were cancelled as the machines were so busy. Amongst the pilots who engaged in this were Capt. Shaw,



["FLIGHT" Photograph]

EASTER AT HADLEIGH : Here are seen the light aeroplanes parading past the crowd on Monday afternoon. Two Westland "Widgeons" are leading and the Blackburn "Bluebird" is following up. The public was able to make a thorough study of all the light aeroplane types at present on the market, for each type was represented in numbers.

Capt. White, Mr. Prentice, Mr. Lowdell, Capt. Lines, Capt. Blake and Mr. Stockbridge, and last, but far from least, Flt. Lt. S. N. Webster, the Schneider Trophy winner. His visits on both days were valuable to the Club as the public willingly paid double price to fly with him in the Blackburn "Bluebird."

MONDAY'S EVENTS

To some extent the programme was repeated on Monday, but for all that there was still sufficient variety and fresh items to make the day equally as interesting. Mr. Prentice took up many passengers in the morning after testing the "Bluebird" with the Club's ground engineer, who appropriately enough, as the Club's machines are "Bluebirds," worked for a considerable time with the Blackburn Aeroplane Company before joining Suffolk. Mr. Lowdell also commenced by taking up passengers, and during one trip a most remarkable and probably unparalleled incident occurred. Whilst looping the "Bluebird," his passenger's cap fell off. He saw it falling, dived and caught the cap against a strut, and brought it to the ground.

Miss Edwards repeated her demonstration and after lunch came a Grand Parade and Fly Past. Then Mr. Lowdell again performed up-side-down flying.

Suffolk Handicap Race.—This was a new event. There were five entries: Miss W. Spooner, on her D.H. "Moth Mk. I."; Capt. N. Stack, on the A.D.C. Aircraft D.H. "Moth"; Capt. Lines on British Airships, Ltd., Avro "Avian"; Capt. Blake on Blackburn "Bluebird," and Capt. White, on D.H. "Moth." The three prizes, £5, £3 and £2 respectively, all went to "Moths." Miss W. Spooner started first with a lead of over two minutes and won easily. Capt. Stack, who started fourth (handicap 4 mins.) was second, followed closely by Capt. White (handicap 3 mins. 25 secs.), who went off third. Capt. Blake (handicap 2 mins 22 secs.) became confused with the turning points, and

came fourth, first appearing to the judges over the aerodrome in the wrong direction. Capt. Lines apparently became lost. He started last (handicap 4 mins. 5 secs.), and was seen a long distance off at the end, making a wide circle. Miss Spooner's time for the course was 15 mins, 38 secs.

Pageant of Travel.—To illustrate the progress of travel throughout the ages, a procession passed the crowd, led by an ancient Briton, followed by a mediæval lady on a horse, the earliest types of bicycles, the steam motor car, modern car, and, finally, light aeroplanes.

Bombing.—Mr. Lowdell, in this event, attempted to bomb an elusive Austin "Seven" with flour bags, which was difficult from the "Bluebird" cockpit. His ten shots gradually improved, and he finally got very close to the target. This was one of the most thrilling items, and it produced some excellent low flying.

Aerial Golf.—Competitors had to aim at a mark with bags of flour within five minutes of the word "go" on the ground. The event was won by Flt.-Lt. Rose on the Westland "Widgeon."

When the flying programme was completed, the prizes were presented by Lady Leucha Warner.

Too much praise cannot be bestowed on the conscientious and strenuous work that the Suffolk Aeroplane Club members carried out to make the meeting a success. The support received by them from visiting aircraft, the public and the weather was well deserved. It is impossible to mention everybody, although everybody ought to be, but one could not fail to notice the constant activities of Mr. and Mrs. H. L. Billington, Mr. and Mrs. C. N. Prentice, Mr. R. Brown, Dr. J. Sleight, Mr. C. Hanson, Major P. L. Holmes, D.S.C., and Mrs. Holmes, Mr. R. S. Smith, Mr. F. Verney and Mr. K. Peck. It looked certain, and we very much hope, that the Club will benefit financially and in membership. It is one of the youngest clubs, and one of the best.

LIGHT 'PLANE CLUBS

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending April 8.—Total flying time, 36 hrs. 35 mins. Instruction, 8 hrs. 30 mins. Solo, training, 4 hrs. 50 mins. "A" Pilots, 20 hrs. 10 mins. Passengers, 1 hr. 45 mins. Tests, 1 hr. 20 mins.

The following flew under instruction with Mr. Parkinson:—Messrs. J. M. Middleton, L. M. Middleton, E. J. Griffiths, L. W. Hayton, R. J. Dickinson, R. N. Bullock.

Solo, training, Mr. R. N. Bullock, Dr. R. E. Alderson, Mr. W. L. Runciman, Mr. N. Horn.

"A" Pilots:—Mrs. Heslop, Mr. C. Thompson, Mr. R. N. Thompson, Mr. F. H. Phillips, Mr. D. Wilson, Mr. H. H. Leech, Mr. J. P. de Pledge, Mr. N. S. Todd, Mr. G. E. Brooks, Mr. P. F. Heppell, Dr. H. B. L. Dixon, Mr. J. Lloyd Browne, Mr. H. D. Mathews, Mr. A. Bell.

Passengers.—With Mr. J. D. Parkinson:—Mrs. Gibbon, Mrs. Kish, Mr. Brooks, Mr. Bulmer. With Mrs. Heslop:—Miss Bulmer, Mr. Bulmer, and Mr. C. Thompson. With Mr. C. Thompson:—Mrs. Heslop, Mr. Bulmer, Mr. Liddle, Mr. Grundy. With Dr. Dixon:—Mr. Stawart. With Mr. A. Bell:—Mrs. Liddle, Mr. Bullock, Mr. W. Todd, Mr. Liddle, Mr. Barnard, Mr. Alton, Mr. Smith.

The following members passed the tests for "A" licences, all in splendid style:—Dr. R. E. Alderson, Mr. W. L. Runciman, and Mr. N. Horn.

Although the weather has been far from ideal, a very satisfactory amount of flying has been carried out. Apart from a rather choppy wind, conditions were fair on Good Friday and Easter Sunday, resulting in a good attendance of members.

NORFOLK & NORWICH AERO CLUB

FLYING report for week ending April 8.—Total flying time, 27 hrs. 35 mins. Instruction with Mr. Fry:—Messrs. W. Mills, E. Varden Smith, A. J. K. Finch, E. Lambert, A. G. Lofly, G. Barker.

Soloists.—Messrs. F. Gough, N. Brett, W. A. Ramsay, H. Pank, R. T. Harmer, R. F. Potter, H. Mack, R. W. Moore, W. P. Cubitt, G. F. Surtees, E. Lambert.

Passengers, 41.

We have put in a sound week's flying, despite the high winds prevailing, and are pleased to report the first solo of Mr. E. Lambert, of Thetford, who, after four hours' instruction, has put up a good show.

Messrs. Mack, Potter and Brett have completed height tests this week, and are now well on the way for licences.

Our three machines visited Hadleigh Sunday morning to wish them success at the Suffolk Club with their rally.

We are pleased to report the arrival of the new Avro Avian this week, and she is a fine kite.

NOTTINGHAM AERO CLUB

REPORT for week ending March 30.—Total flying time, 16 hrs. 5 mins. Dual, 8 hrs. 55 mins. Solo ("A" Licence), 4 hrs. 35 mins. Solo (under instruction), 1 hr. 40 mins. Passenger flight time, 20 mins. Tests time, 35 mins.

Passengers (with Mr. Martin), Miss Moore, Mrs. Lucas and Mrs. Clark; (with Mr. A. C. Ball) Miss Walker, Miss Wallis, Miss Clark and Mr. Clark; (with Mr. H. A. Hallam), Messrs. Kay and Meekling; (with Mr. Cyril Sands) Mr. Burnie; (with Mr. T. H. Paul) Mr. Tunks.

Dual with Mr. Martin.—Messrs. Ashworth, Calladine, Bradley, Hancock, Lucas, Glenn, Lazzerini, Dawson, and Chawla.

Solo "A" Licence.—Messrs. Ball, Hallam, Sands, Cox, Paul, and Blake. Solo (under instruction).—Messrs. Pilgrim and Granger.

Weather has again upset flying somewhat. Visitors:—Norman Jones and friend, with his Moth, en route North and Air Taxi Moth (Capt. Birkett).

FROM THE FLYING SCHOOLS

Henderson Flying School, Ltd., Brooklands Aerodrome.

REPORT for week ending March 29.—Total flying, 29 hrs. 25 mins. Dual 24 hrs.; solo, 5 hrs. 25 mins.

Dual (with Mr. H. D. Davis): Messrs. Hamilton, Hughes, Worley, Hsiao, Daniels, Mills, Whitard, Habsburg, Whitley. Dual (with Mr. A. E. Golds): Messrs. Van Gessel, Hughes, Hsiao, and Dr. Forcyth.

Solo: Messrs. Habsburg, Whitley, Liniker, Crabtree, Patton-Bethune, Anderson.

The dual time is well up this week owing to the arrival of several new pupils. Messrs. Worley and Whitard are taking it in turn for early morning flying and the dual machine is well away by 7.15 a.m.

The Spring term has now commenced and the firm has at the moment got three vacant rooms for new pupils.

The total number of qualified pilots turned out since the New Year now number seven, and several more are about nearly to take their tests.

The De Havilland Flying School, Stag Lane Aerodrome

REPORT for week ending April 1.—Total flying hours, 103 hrs. 20 mins. Instruction: dual, 36 hrs. 50 mins.; solo, 58 hrs. 40 mins. Other flying, 7 hrs. 50 mins.

Last month has proved a record March for our school, the total flying reaching the high level of 304 hrs. 30 mins., made up of 120 hrs. 15 mins. dual and 184 hrs. 15 mins. solo.

During the week two *ab initio* pupils carried out first solos, and three other pupils successfully passed various tests necessary for the obtaining of "B" licences.

Two new "Moths" were tested, and experiments with the slotted wings on a "Moth" machine have been continued.

The "Hound" machine has also undergone various tests during the week.

REPORT for week ending April 8.—Total flying hours, 91 hrs. 40 mins. Instruction, dual, 35 hrs. 30 mins.; solo, 51 hrs. 15 mins. Other flying, 4 hrs. 55 mins.

Flying on the school was greatly curtailed, owing to the Easter Holiday, nevertheless, three Royal Air Force Reserve pupils successfully accomplished first solos, and one civil pupil obtained his "A" licence.

Five new "Moths" were tested, and various demonstrations given with the "slotted wings Moth."

During the Easter Holiday, three machines represented us, both at the Cinque Ports Flying Meeting at Lympne, and at the Suffolk Aero Club Meeting at Hadleigh. At both places the "Moth" machines were very conspicuous, not only for their various successes, but also for their numbers, as at least 12 private "Moth" owners enthusiastically supported each meeting.

With the mention of "private owner enthusiasts," it is interesting to mention that a recent pupil of ours, Lt.-Com. H. C. Macdonald, who only obtained his "A" licence a fortnight ago, is now engaged in flying his "Moth" machine to India. At the time of writing, he is to be congratulated on reaching Marseilles, in a minimum of time.

CIVIL AVIATION

Air League's First Dinner

At the first annual dinner held by the Air League of the British Empire at the Savoy Hotel on April 3, British aviation was widely represented. Mr. Phillip S. Foster, Chairman of the Executive Committee, presided, and the first speaker, after the Chairman's opening remarks, was Sir Eric Geddes, who is Chairman of Imperial Airways. Referring to the Air Estimates he said he did not think that Sir Samuel Hoare's announcement on the India service had received due attention, because the line operating between Cairo and Karachi had never extended farther than Basra. The agreement which was now reaching its final stage in the negotiations was regarded by Imperial Airways as a great advance towards putting civil aviation on a proper basis. It was the wish of Imperial Airways to fly large machines between London and India with sufficient support to provide for rapid obsolescence of each successive type of aircraft.

They believed that if they could get laid down three or four successive generations of large commercial aircraft at periods of three to four years each, on a regular programme of development, civil aviation on the main lines with such aircraft could be made to pay without subsidy. Such a programme would let designers know what they had to work for and also cultivate in the minds of the public an appreciation of air travel as not transportation only but as a service which saved time. Until the time came for that it was essential that the operating company on the main air routes should have tenure and freedom from subsidized competition.

Sir Eric Geddes visualized the main lines as linking England with Australia *via* India and Singapore and England with the Cape *via* Cairo. He next urged strongly the necessity of feeder lines to the main lines and the support of small undertakings for that purpose to act independently, though under reasonable supervision. Much smaller and lighter machines could be used on these feeder lines, and possibly there need not be quite the same standards as applied to the main concerns, always excepting any reduction in safety standards. With the main commercial route entrusted to one company it would probably be helpful if the feeders received assistance and advice from that company and also, in a measure, be affiliated to it.

Capt. F. E. Guest, M.P., followed Sir Eric Geddes as the next speaker, and proposed the toast of "British Aviation." He said British aviation was in a state of arrested development because of an insufficiency of money. The pioneer work of the R.A.F. he would be the last to decry, but there was the danger of perfecting the striking force and neglecting the driving force of aviation. The essential basis of air defence and power was a highly-trained and modern man and machine power, both for first line and the reserve.

Our present short service commission system trained airmen for the necessary reserves at great expense, then they were pushed out of aviation altogether. Their skill thus deteriorated and their spirit became embittered. The Auxiliary Air Force was not receiving its fair share of public attention, and our citizens were not willing to help those who were running considerable danger while learning to defend them from very great dangers.

Civil aviation was wholly a weak spot. We carried only one-ninth of the passengers Germany carried, flew one-twelfth of the miles Germany flew, and one-fourth of those flown by France. We could not afford to let that inferiority continue. The money required could come from other economies in other services. An ideal was a good aerodrome near every large city, particularly round the southern and

south-eastern ports, whilst Ireland, the Isle of Man, and the Channel Islands must not be forgotten.

Col. The Master of Sempill, Chairman of the Royal Aeronautical Society, responded. He said that the tendency to put all the money that could be made available for civil aviation into the operation of air routes was a big mistake. A substantial portion should be devoted to the construction of new types of aircraft. Civil aircraft orders were so few and far between that little interest was taken in the development of the type. He would like to see the London to Paris service reduced, and the money saved used for the construction of new machines which could be tested on the remaining service or on the Middle East service. There was far too much talk about civil aviation flying by itself and being made to pay, and the result was that the production of machines was largely neglected. The Air League, he said, had the miserable total of under 6,000 paying members, a deplorable condition which existed in no other country. In Russia the Air League there was said to have more than 3,100,000 members who had called themselves the Friends of the Red Air Fleet. Germany had a membership of 1,000,000; France and Italy hundreds of thousands; and Poland, with a population of 25,000,000, had 500,000 members. In Czechoslovakia there were 100,000 members out of a population of 13,000,000.

Rear-Admiral M. Sueter, M.P., the next speaker, spoke interestingly of his work in the earlier days of flying, and urged the development of the torpedo machine. He contested the waste of millions of pounds on battleships when money was so urgently required for developing the Air Force; and quoted figures indicating the success of torpedo planes when attacking battleships.

The other speakers were Lieut. Col. Mervyn O'Gorman, Col. H. C. Woodcock, M.P., Mr. Ammon, M.P., and finally, Col. W. A. Bishop, V.C. The latter had recently been to Germany where he met a fine reception and encountered German war "aces" who had flown on the war fronts where he had been engaged. Col. Bishop said that he was very impressed by the strides Germany was making in civil aviation, and he urged the need for similar development in this country.

Amongst the list of guests were:—Air Vice-Marshal Sir A. Vyell Vyvyan, Lady Vyvyan, Sir Henry White-Smith, Sir Harry Brittain, General Sir Reginald Wingate, Sir Herbert Morgan, Brig.-Gen. P. R. C. Groves and Mrs. Groves, General Sir C. Delme-Radcliffe, Lieut.-Col. M. O. Darby, Lieut.-Col. Heneage and Mrs. Heneage, Admiral Mark Kerr, Mr. and Mrs. F. Handley Page, Mr. and Mrs. R. Blackburn, Maj. F. A. Bumpus, Mr. John Lord, Mr. and Mrs. H. T. Vane, Mr. R. A. Bruce, Lieut.-Col. N. G. Thwaites, Mr. and Mrs. Wallace Barr, Capt. P. Acland, Maj. R. H. Mayo, Viscount Sandon and Lady Sandon, Wing-Commander S. W. Smith, General Sir Ernest Swinton, Maj. F. Yeats-Brown, Mr. and Mrs. H. Burroughes, Maj. Bulman, Maj. J. F. Buchanan, Mr. Griffith Brewer, Capt. Andrew Swan, Count and Countess Van den Heuvel, Capt. N. MacMillan, Commander J. M. Kenworthy, Capt. H. M. Hopwood, Mr. H. H. Morris, Sqdn.-Ldr. England and Mrs. England, Lieut.-Col. Louis Fell, Mr. Hore-Belisha, Lieut.-Col. C. L'Estrange Malone, Capt. A. J. Bott, Flight-Lieut. W. T. Williams and Mrs. Williams, Mr. and Mrs. F. T. Courtney, Flight-Lieut. Dalton and Mrs. Dalton, Maj. H. Petre, Sir Ernest Petter, Maj. J. C. Savage and Mrs. Savage, Mr. E. F. Spanner, Mr. and Mrs. C. V. Allen, Maj. Barlow, Mr. W. Laffin, Mr. F. May, Mr. H. E. Pooley and Mr. F. St. Barbe.

Civil Aviation in Australia

AUSTRALIA is providing £200,000 for opening civil air lines between Perth and Adelaide, Camooweal and Daly Waters, Derby and Wyndham, Melbourne and Hobart, Charleville and Brisbane, and Sydney and Brisbane. When this extensive programme is completed Australia will be practically encircled by air communications.

Canadian Air Mails

OWING to the success of the experimental air mails last year, the Canadian Government has awarded four contracts for air mail services to permanent lines. One will go to the Canadian Trans-Continental Airways, Ltd., for a four-day-a-week service between Father Point and Montreal and for a bi-weekly service between Montreal and Ottawa. The other contracts will be for a four-day-a-week service (by Canadian

Airways, Ltd.) between Montreal and Toronto, and a daily service (by Canadian Colonial Airways, Ltd.) between Montreal and Albany, N.Y., when a connection will be made with the U.S. Air Mail service. The rate to be paid under these contracts will be in the neighbourhood of \$1.25 (5s.) per flying mile.

Seaside Flying

BRITISH AIRSHIPS, LTD., hope to have flying centres at Blackpool, Yarmouth, possibly Torquay and other well-known seaside resorts. They are open to do flying for corporations and municipalities which are interested in this method of adding to the attractions of the holiday season. Those interested communicate with them at 21, Northumberland Avenue, W.C.2.

H.M. AIRSHIP R.101

A PAPER entitled "Some Modern Developments in Rigid Airship Construction," was read by Lieut.-Col. V. C. Richmond, O.B.E., B.Sc., A.R.C.S., A.F.R.Ae.S., before the Institution of Naval Architects on March 30, 1928, in the hall of the Royal Society of Arts.

Col. Richmond said that interest must necessarily be very critical in the departures from Zeppelin pattern which had been made in the design of R.101. Some of the changes in design were necessitated by the increase of size; but not all. What were the reasons, advantages, and risks?

Col. Richmond paid a tribute to the ability of the late Mr. C. I. R. Campbell, some of whose original ideas had been copied by the Zeppelin Co. in the Los Angeles. In the past seven years research had been carried out, and this country was now probably ahead of Germany in that respect.

The author then dealt with the question of fineness ratio. A reduction in aerodynamic bending moments would follow a reduction in the length of the ship. The bare hull resistance coefficient of R.33 in the wind tunnel was 0.010, while that of R.101 was 0.007. Stability and controllability were only a matter of sufficient fin and rudder areas. The wind tunnel showed that these need not be excessive, as the flow of air over the tail was very smooth. These low resistance forms were more seriously affected than the cruder forms as regards drag (not stability) by excrescences, and R.101 had an estimated overall resistance coefficient lower than that of R.33.

Col. Richmond traced the history of the low fineness ratio forms, which were first used in the little "Bodensee." He showed that at first it was over-controlled, which gave an impression of instability. When the control surfaces were reduced, at the same time the ship was lengthened, Herr Paul Jaray, the designer, attributed the improved stability to the reduction of these surfaces, while Dr. Eckener attributed the improvement to the lengthening. Col. Richmond concluded that the result did not discount the results of the wind tunnel experiments, which showed the low fineness ratio forms to be the more stable.

A series of slides was then shown which illustrated details of the hull of R.101. The ship has no keel, and there are 15 main girders and 15 intermediate girders, the latter reducing the stresses on the fabric cover. No transverse members will touch the cover, and thus there will be no transverse ridges to reduce speed. It was also explained that a system of nets had been designed for containing the gas bags, which would prevent them from imposing lateral loads on the longitudinal girders.

The design of the transverse frames was described as one of the most revolutionary features in the structure of R.101. The single members of the conventional frame were replaced by deep triangular braced structures made strong enough to resist all transverse forces without any transverse bracing. The system of wiring was also illustrated. By means of it all end pressures arising from gas pressure were transmitted into the longitudinal members only and did not stress the transverse frames. The author explained the advantages of this system in the case of a gas bag being partly or wholly deflated.

The change from the Zeppelin girder of open channel section to the tubular girder developed by Messrs. Boulton and Paul, Ltd., was next described. The author emphasised that stainless steel was employed in place of duralumin only where weight would obviously be saved. About one-quarter of the weight of the complete structure would be accounted for by steel.

The tubular construction, the ends of the tubes being closed, was a protection against corrosion. The outer surface of the steel tubes was lacquered and the duralumin was treated by the anodic process. Col. Richmond prophesied freedom from corrosion for from seven to ten years.

Where steel booms were used in the girders, the webs were made of duralumin. Dealing with the different rates of expansion of the two metals, figures were given to show that, while the maximum difference of temperature likely to be experienced even in the tropics from the temperature conditions under which the girders were manufactured was of the order of 30° C., the stresses induced would be:—

For steel	0.98 tons/square inch.
For duralumin	1.14 tons/square inch.

which Col. Richmond said represented an almost negligible proportion of the failing stresses of the materials.

The tests on the new types of girder and on a complete bay were also described in detail. The results of the tests proved extremely satisfactory.

The Discussion

Group-Captain P. F. M. Fellowes, D.S.O., Director of Airship Development, spoke about the policy embodied in the two new ships. Before airships could become commercial, they must be proved to be robust and able to withstand

all stresses in flight and at the mooring tower. A great part of the present programme was to prove that a rigid hull could be made strong enough. They had not hurried but had proceeded cautiously; and the Air Ministry's policy had been "Safety first." This programme was the seed, and the fruit would be future developments. The next airships might be made lighter, but they could not say that definitely until after the trials of R.100 and R.101.

Mr. Williams said that he had been out of airships for eight or nine years; but he had been in the trials of R.23 and others. There had been intemperate criticism of the present airships, and there was always a danger that opinion might go with the volume of sound. Col. Richmond's paper had shown ample justification of the present policy. The criticism, when boiled down was that airships were big, difficult to handle, frail as compared with such structures as cathedrals and marine ships, and subject to aerodynamic forces which were imperfectly understood. He admitted that they were still experimental but not to the same extent as formerly. The slides had shown the improvement made, and he congratulated Col. Richmond on "getting rid of the infernal Zeppelin joint." But in Zeppelins it was quite sound to accept a lower factor of safety than in marine ships.

Mr. E. F. Spanner commenced his remarks by apologising to Col. Richmond for having assumed that he did not respect Mr. R. I. C. Campbell. He congratulated the Air Ministry for coming into the open at last. He said that the shape of airships had been "plumped up" (1) to increase strength, (2) to reduce drag, and (3) to make them commercial. He said that comparison with the performances of non-rigids was useless, because the non-rigids would flex, which he seemed to claim would make them more stable. As for the Bodensee, he thought that Col. Richmond had confused the disease with the remedy. If she were over-controlled, why was not this corrected? He considered that she must have been unstable on account of the fineness ratio.

He displayed a diagram to explain that a rigid rarely travelled on a horizontal axis but was nearly always nose up or nose down, which he said would be very uncomfortable for passengers. He quoted Fraser on full scale experimental flights, and mentioned an angle of 12° inclination.

Mr. Spanner was proceeding to other points when the Chairman pointed out that time was limited, and said that if he would send in any further remarks in writing they would be published in the Journal of the Institution.

Col. the Master of Sempill wished that he could hear of complete collaboration between the design staffs at Howden and Cardington, and also hoped that touch was maintained with the design staff of the Zeppelin Co.

Major G. H. Scott, C.B.E., A.F.C., said that he was more interested in R.101 than anybody else because he hoped to have the honour of flying her. He had watched the methods of design and construction, and was confident that she was a strong, sound airship. He was perfectly satisfied that she would be safe. He said that short ships were easier to control than long ones. It was wrong to say that they would fly at an angle of 12°. Mr. Spanner had quoted a trial flight when a ship was deliberately flown at that angle for the purpose of pressure plotting.

Mr. R. V. Southwell asked why Mr. Spanner had criticised the design of the ship when he did not know what the design was. He had spoken of undue stresses on the fabric, assuming that there would be no intermediate girders—which there would be. Col. Richmond had explained the parachute system of suspension of the gas bags, which he considered the most beautiful feature of the design. As for control, he thought it useless to argue with a man who believed non-rigids to be more stable than rigids.

He said that after the R.38 disaster they were obliged to make a fresh start with new men. Were the new men right in attempting new methods? Ought they to have tried to make improvements by research, or to have clung to Zeppelin methods, of which they had really but little experience?

Wing-Commander T. R. Cave-Browne-Cave, C.B.E., spoke of the strain meters on the test bay of R.101, and said that they would also be used on the trial flights.

Col. Richmond, replying to the debate, said that he could not follow the argument that a rigid was less stable than a non-rigid. As for fineness ratio, if the argument were followed to its conclusion, a sphere would be more stable than a long ship. Mr. Spanner evidently did not know the history of the Bodensee, for the control surfaces were cut down when they were found to be too large. She made a very satisfactory ship. Dr. Eckener was not a designer. He was once a bitter opponent of airships but was converted by Count Zeppelin. He (the speaker) hoped similarly to convert Mr. Spanner in due course. As for official secrecy, he thought that there was no use in talking while they were dealing with problems and making up their minds. He wanted all possible co-operation and help, and he was glad to say that Cardington was in close touch with the Zeppelin design staff.

IN PARLIAMENT

All-Metal Aircraft

LIEUT.-COMMANDER KENWORTHY, on March 29, asked the Secretary of State for Air what firms in this country are manufacturing all-metal aeroplanes; if his attention has been called to the intention to use Junker three-engined all-metal monoplanes on the Cape Town-Johannesburg route on the grounds that no suitable British machine is available at the same price; and what information he has on this subject?

Sir S. Hoare: As regards the first part of the question, most of the British aircraft manufacturers have made experimental aircraft of all-metal structure during the past few years, six have brought such aircraft to the production stage, and two have constructed aeroplanes of which the covering as well as the structure was of metal. As regards the remaining parts of the question, I understand that there is at present no British commercial machine in existence or under design which is strictly comparable to the Junker in so far as the latter machine is of all-metal construction and entirely covered in metal, but that the price is no cheaper than that of British-built aeroplanes which will carry the same load. The service in question is not, of course, to be subsidised from the Exchequer, and it is entirely for the South African authorities to decide the type and origin of the aircraft to be employed upon it.

Aviation Jurisprudence

SIR SAMUEL HOARE, on April 4, in answer to Mr. Malone, said the Air Ministry will not be represented at the international congress on jurisprudence in regard to aviation, which is being held at Madrid on May 28.

London-Lyons-Marseilles Air Mail

THE Postmaster-General announces that the despatch daily (except Sundays) of letter mails has been resumed on the London-Lyons-Marseilles route (Routes 1 and 2, Air Mail Leaflet), but not to Geneva at present. The latest time of posting at the General Post Office, London, will be 5 a.m.

PERSONALS

Married

DONALD BULAY-WATSON, A.F.C., only son of Sir Francis Watson, M.P., and Lady Watson of Torracks Hill, Poole in Wharfedale, was married on March 26, at the Chapel of the Savoy, to GWENDOLYN MAUD MYCOCK, youngest daughter of the late Mr. W. Pritchard Davies, of Woodlands, Chorlton-cum-Hardy, and Mrs. Davies, Boverton, Hampton Wick.

To be Married

THE engagement is announced, and the marriage will take place in Bombay, India, on May 18, between Flight-Lieut. CYRIL FERDINAND BRIGGS, R.A.F.O., youngest son of the late Mr. Henry Briggs and Mrs. Briggs, of Leighton Buzzard, and BERNICE ZOE, only child of the late Mr. Ernest Mansfield and Mrs. Mansfield, of 3, Hyde Park Mansions, W.

Items

PRINCESS ANNE OF LOWENSTEIN WERTHEIM FREUDENBERG, of Upper Belgrave Street, S.W., who started on a cross-Atlantic flight with Colonel Minchin and Captain Leslie Hamilton on August 31, 1927, and has not since been heard of, has by an order of the Court dated February 6 been presumed to be dead. The Princess left £28,265.

THE will of the late Mr. WILLIAM HENRY DINES (aged 72), of Benson, Oxon, an Hon. Fellow of the Royal Aeronautical Society, has been proved at £20,865.

The special fee has been reduced to 2d. per ounce, as for the rest of France. This route will normally give advantage for letters for the South of France, and on Fridays an opportunity of overtaking at Marseilles (or Toulon) the mails despatched from London by ordinary service the previous evening for Egypt, India, Iraq, Australia, East Africa, etc.

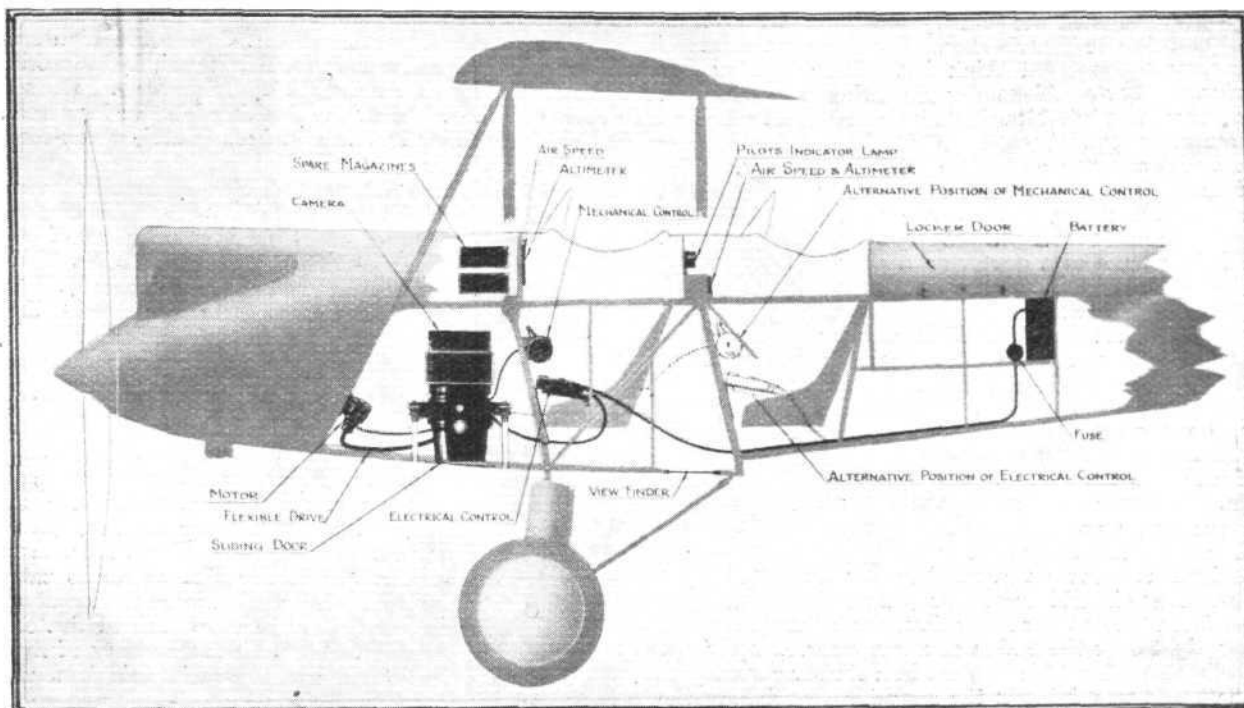
AVRO "AVIAN" MK. III. ADAPTED FOR AIR SURVEY

THE Avro "Avian" can now be supplied for use as an aerial photographic survey aircraft. Mr. F. P. Raynham has purchased one so adapted.

The accompanying illustration shows how the "Eagle" aerial camera and its accessories are fitted. A neat and accessible installation is provided, and operators who have used larger aircraft for survey work suggest that the "Avian" would be superior from an installation and ease of operation point of view. The camera is carried on an adjustable mounting immediately in front of the operator, who sits with his feet on either side of the camera cone, in a very comfortable

The ability to install the "Eagle" camera in the "Avian" opens up a new field of usefulness for the light aeroplane, and the cost of an aerial survey can be very materially reduced by the use of such a machine. This reduction in cost applies both to the initial cost and the running charges. A feature which makes the "Avian" particularly suited for the installation of an aerial camera is the fact that the fuselage of this machine is considerably wider than that of the majority of light aeroplanes, which, of course, gives more room and greater comfort to the operator.

When used for aerial survey work the pilot occupies the



AN AVRO "AVIAN" FOR AIR SURVEY: This diagram shows the installation of the Vickers "Eagle" aerial camera in the Avro "Avian III," one of which has been supplied to Mr. F. P. Raynham.

position. It is so placed that it can be easily adjusted for angle, etc., and the magazine can be readily changed.

Provision is made for carrying two spare magazines in a cupboard let into the instrument-board in front of the operator. The standard attachment brackets for the various accessories, such as motor, electrical control, and mechanical control, are mounted in convenient positions in the aircraft, and the whole installation can be fitted and removed from the machine in quite a short time. Installation of the camera does not interfere with the fitting of the standard dual control in the machine, except that the front joystick cannot be used when the machine is carrying the camera.

When the latter is removed the front control stick can be slipped into place and the machine used as a dual-control two-seater immediately.

rear cockpit and the operator the front cockpit. If, however, it is desired to carry out the work as a single seater, this can be done by fitting the electrical control and mechanical control on standard brackets which are provided in the rear cockpit. When the machine is flown as a single-seater the front cockpit decking, which is made to hinge up out of the way in order to provide easy access to the front cockpit, is removed and replaced by a special section of decking without a hole in it, thus making the machine into a clean single-seater.

A feature of importance in a machine for survey work is that no part of the undercarriage should interfere with the camera field of view, and this feature is provided by the split axle undercarriage of the "Avian," which leaves an entirely unobstructed field of view. The "Avian" can also be arranged as a seaplane for this work.

The Royal Air Force Memorial Fund

The usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House on April 3. Lieut.-Com. H. E. Perrin was in the chair, and the other members of the Committee present were: Mrs. L. M. K. Pratt-Barlow, O.B.E., Mr. W. S. Field, Sqdn.-Ldr. Douglas Iron, O.B.E. The Committee considered in all six cases, and made grants to the amount of £128 13s. 4d. The next meeting was fixed for April 19, at 2.30 p.m.

R.A.F. Flying Accidents

THE Air Ministry regrets to announce that as the result of an accident near Colchester to a Bristol fighter machine of No. 2 (A.C.) Squadron, Manston, on April 2, Flying-Officer Jack Hadden (Lieutenant, Black Watch), the pilot of the aircraft, and 370079 A.C.1 George Henry Towers were killed.

As the result of an accident near Hillah, Iraq, to a D.H.9a machine of No. 30 (Bombing) Squadron, Hinaidi, Iraq, on

April 2, Pilot Officer Jack Whitworth Wood, the pilot of the aircraft, and 358180 A.C.1 William Waugh were killed.

As the result of an accident at Hong Kong to a Fairey 3F machine of No. 440 (Fleet Spotter Reconnaissance) Flight, H.M.S. *Hermes*, on April 3, Flying-Officer Alfred William Beverley Hale, Royal Air Force, the pilot of the aircraft, and the passengers, Lieut. John Henry Patrick Graham, Royal Navy, and J.77956 Telegraphist Stanley Jackson, were killed.

Captain Burgess makes a Move

CAPTAIN F. H. BURGESS, who has for many years been a familiar and popular figure on the advertising side of Rolls-Royce, Ltd., has relinquished his post to join one of Mr. Henry Mond's companies for a number of years. Captain Burgess will be missed by the aircraft industry, but his many friends will wish him every happiness and prosperity in his new position. The duties hitherto so ably executed by Captain Burgess will be taken over by Mr. Millard Buckley, to whom in future communications should be addressed.

AIRISMS

FROM THE FOUR WINDS

African Survey Flight

ON April 3, Sir Alan and Lady Cobham and party left Cape Town in the Short "Singapore" (Rolls-Royce "Condors") flying boat on the homeward section of this great flight. They took off from Simon's Bay in a S.E. gale, and flew for seven hours up the south-west coast to Lüderitz. On April 5 they resumed the journey—again in a gale, from the south—and flew to Walvis Bay. For the greater part of the flight they encountered thick fog. The following day (Good Friday), Porto Alexander (Angola) was reached, where the Portuguese inhabitants gave them a great welcome. The next stage, on April 7, was to Lobito Bay, and on April 8 (Sunday), a 500-mile trip was made to Banana Creek, at the mouth of the Congo River. Here, a member of the party, Mr. F. Green, the engineer, had to leave them, owing to illness, against which he had been fighting since they left Cape Town. He was left in charge of a doctor on a Belgian Government steamer. The flight proceeded on April 9 to Libreville.

African Service Flight

THE three R.A.F. Fairey 111F machines which recently completed the outward stage of the annual service flight from Cairo to Cape Town and back, started on the return flight on March 31 and reached Grahamstown. They flew to Durban on April 3. On April 6 they arrived at Pretoria and left there on April 9 for Palapye, accompanied by a South African Air Force Squadron, which will fly as far as Khartoum. Bulawayo was gained the same day.

Lady Heath at Cairo

LADY HEATH, who is flying home to England from South Africa, arrived at Cairo on April 5 in her Avro "Avian." For the present she is held up at Cairo, as the British authorities have refused to allow her to continue her flight unescorted. During her flight over the Sudan she was escorted by Lieut. Bentley, who also offered his services in a similar capacity to Lady Bailey, who was flying in the opposite direction, to the Cape.

Lady Bailey Crashes

LADY BAILEY, with Lieut. Bentley as escort, left Khartoum for Malakal on April 5.

Lieut. Bentley left Lady Bailey at Nimule, and she continued alone. All went well with her until she reached Tabora, on April 10, when she crashed in landing. Fortunately, she was uninjured, but her de Havilland "Moth" was badly damaged. Lady Bailey is endeavouring to continue her flight in a S.A. Air Force machine, if this can be arranged.

Paris-Timbuctoo-Paris in 4½ Days

TWO French pilots, Capt. Girardot and Lieut. Cornillon, have just completed a remarkable long-distance flight by flying from Paris to Timbuctoo and back in 4½ days. They left Le Bourget in an Amiot S.E.C.M. 122 (650 h.p. Lorraine), accompanied by a navigator and a mechanic, early in the morning on April 3, and arrived at Colomb-Bechar (Algeria) that evening. After refuelling (man and machine) they set

out again, and flying by night over the Sahara, reached Timbuctoo at 6 a.m. the following morning. They started again after a hasty meal, and flying via Banako, Dakar, and Casablanca, arrived at Villacoublay on April 7, having covered in all 6,200 miles in 65½ flying hours, at an average speed of 95 m.p.h.

French Air Tourists

THE world air tourists, Capt. Costes and Lieut. Le Brix left Tokio on April 8 and reached Hanoi, in Indo-China, the next afternoon after being six hours overdue. They made a landing on the way near the Tonking frontier for petrol. On April 10 they flew to Calcutta from Hanoi, a non-stop flight of 1,100 miles.

German Atlantic Attempt

UNFAVOURABLE weather still detains the German airmen at Baldonnell, Ireland. There has been a change of personnel since their arrival from Germany, on March 26, to attempt the Atlantic crossing in the Junkers single-engine monoplane. Commandante I. Fitzmaurice, who commands the Irish Free State Air Force, will accompany Capt. Kohl and Baron von Hühnefeld in place of Herr Spindler, who has returned to Germany.

Lindbergh's Plans

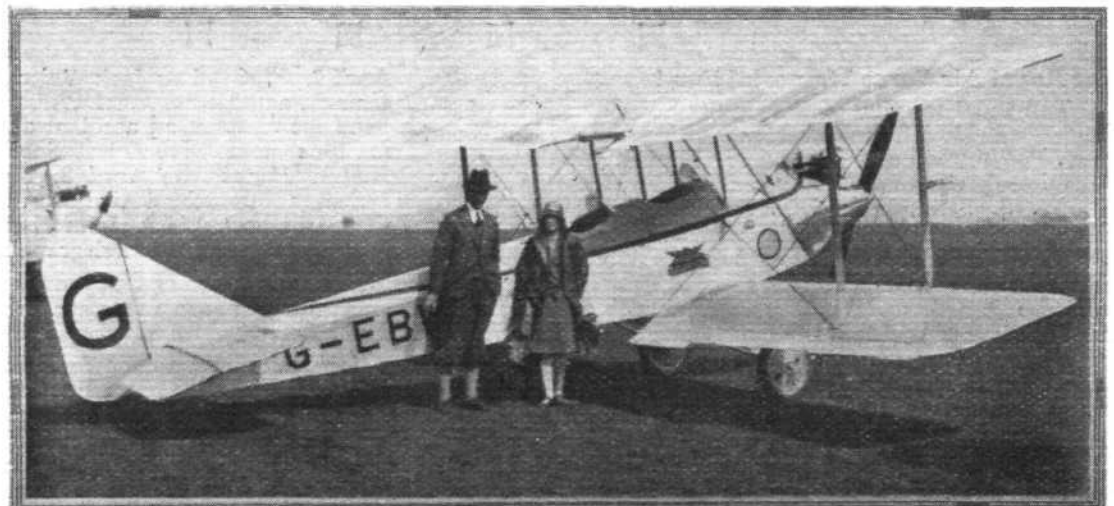
COL. LINDBERGH is reported to be making preparations to fly the Atlantic again in the summer and then continue a "good-will" air tour of Europe and Asia. It is possible that he may also attempt the Pacific flight. A new monoplane is practically ready for delivery to him, constructed by the manufacturers of his "Spirit of St. Louis" Ryan monoplane. He is now flying to San Diego to take over. It is further reported that Col. Lindbergh is to embark on a great "demonstration" tour to show United States public servants the practicability and absolute safety of flying. A three-engined Fokker has been chosen for this demonstration.

Mr. Van Lear Black Busy Again

MR. VAN LEAR BLACK, who, it will be remembered, has made numerous business flights in the past—covering all together some thousands of miles—has again made extensive use of the aeroplane for business this year, as the following log will show. The flights were carried out, with Mr. Black as passenger, in one of the K.L.M. Fokker "Jupiter" air liners. Jan. 16, London-Liverpool-London (410 miles); Jan. 17-18, London-Paris-London (430 miles); Jan. 25, London-Amsterdam (252 miles); Jan. 28, Amsterdam-London (252 miles); Feb. 4, London-Berlin (621 miles); Feb. 7, Berlin-London (621 miles); Feb. 11, London-St. Raphael, (714.6 miles); Feb. 15, St. Raphael-Paris (500 miles); Feb. 16, Paris-London (215 miles); Feb. 24, Rotterdam-Copenhagen-London (1,178.7 miles); Mar. 2, London-Leipzig (596.5 miles); Mar. 4, Leipzig-London (596.5 miles); Mar. 7, flight over London (198.8 miles); Mar. 8, London-Paris (215 miles); Mar. 11, Paris-London (215 miles); Mar. 13, London-Bordeaux (537.5 miles). Total distance flown, 7,553.6 miles. British business men, please note!

Visitors to the
Lympne Meeting:
Mr. and Mrs. F.
P. Raynham, with
their "Avian,"
which Mr. Rayn-
ham has bought
for photographic
survey work.

"FLIGHT" Photograph



THE ROYAL AIR FORCE

London Gazette, April 3, 1928

General Duties Branch

Mate S. R. H. Davenport, R.N., is granted a temp. comm. as Flying Officer on attachment for four years' duty with R.A.F. (March 26).

The foll. Pilot Officers are promoted to rank of Flying Officer:—H. J. Walker (July 16, 1927); G. L. G. Richmond (Oct. 11, 1927); M. R. Edmondson (Nov. 8, 1927); A. L. Mortimer, U. S. Mackay (Jan. 10); W. T. Walton, B. W. Barton, A. R. Ward, C. E. Kay, M. M. Restell-Little, H. B. Collins (Jan. 14); H. H. Ellison, K. E. Parker, A. A. Rumsey (Jan. 17); W. G. Chesbire (Jan. 28); G. J. Powell, T. H. Downes, J. F. Moir, L. T. Carruthers, J. G. Elton (March 1).

The foll. Pilot Officers on probation are confirmed in rank:—E. F. Shine (July 17, 1927); H. F. Surén, J. H. L. Maund, R. F. Gandy, F. J. Taylor, A. McKee, J. W. Wood, J. B. Knapp (Jan. 4); R. G. Forbes (April 6).

Wing-Commander E. L. Gossage, D.S.O., M.C., ceases to be seconded for duty at the Staff College, Camberley (Jan. 1). (Substituted for *Gazette*, March 27, 1928.) Wing-Commander E. R. Manning, D.S.O., M.C., is placed on half-pay list, scale B (April 1 to Aug. 31, 1928, inclusive). The following are placed on retired list at their own request:—Air Commodore L. E. O. Charlton, C.B., C.M.G., D.S.O. (April 1); Flight Lt. E. J. McLoughlin (March 31). A. D. Merriman, Lt. (E) R.N., Flying Officer, R.A.F., relinquishes his temp. comm. on return to naval duty (March 26).

Stores Branch

Pilot Officer H. M. S. Dawes is promoted to rank of Flying Officer, with effect from Feb. 23 and with seniority of Oct. 6, 1927.

Medical Branch

Flight Lt. H. E. Hayes (Temp. Capt. Dental Surgeon, Gen. List) relinquishes his temp. comm. on relinquishment of his Army commission (March 11).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flight Lt. D. Craik, D.F.C., is employed with Regular Air Force for a period of two years (March 20).

The following are granted commns. in Class A.A. as Pilot Officers on probation:—H. St. G. Burke, R. W. Burkitt, R. C. C. Gale, R. W. H. Knight, B. N. H. Thornley (March 15); W. E. Hampton, P. G. Philcox, A. N. Spottiswoode (March 19); L. C. Williams (March 20).

Flight Lt. A. G. Taylor, A.F.C., is transferred from Class A to Class C (Feb. 23); Flying Officer, R. F. Cathrow is transferred from Class B to Class C (Feb. 5). The following Flying Officers relinquish their commissions on completion of service:—C. T. S. Capel, M.B.E. (Sept. 18, 1927); R. P. Whyte (Jan. 6).

Medical Branch

Hon. Flight Lt. W. G. Weston, M.B., is promoted to the rank of Hon. Squadron Leader (April 3).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Squadron Leaders: J. Leacroft, M.C., to No. 3 Flying Training Sch., Grantham, 1.4.28. J. C. P. Wood, to No. 101 Sqn., Bircham Newton, 28.3.28. G. B. A. Baker, M.C., to No. 4 Flying Training Sch., Egypt, 15.3.28.

Flight Lieutenants: J. N. D. Anderson, to No. 407 Flight, Donibristle, 20.3.28. J. L. McE. Hughes-Chamberlain to Fighting Area, H.Q., Uxbridge, 5.4.28.

Flying Officers: R. A. Barnett, to No. 31 Sqn., India, 23.3.28. J. C. Cunningham, to No. 20 Sqn., India, 23.3.28. L. B. McGovern, to No. 6 Sqn., Iraq, 9.3.28. E. H. M. David, to No. 5 Flying Training Sch., Sealand, 21.3.28. H. E. Rew, to School of Army Co-operation, Old Sarum, 22.3.28. C. H. Morgan, to R.A.F. Depot, Egypt, 11.3.28.

Pilot Officers: J. F. Griffiths, to No. 28 Sqn., India, 23.3.28. L. S. Tindall, to No. 207 Sqn., Eastchurch, 14.3.28.

Accountant Branch

Flight Lieutenants: W. J. Heneghan, to No. 3 Flying Training Sch., Grantham, 27.3.28. P. Hay, M.C., to No. 1 Air Defence Group H.Q., 26.3.28.

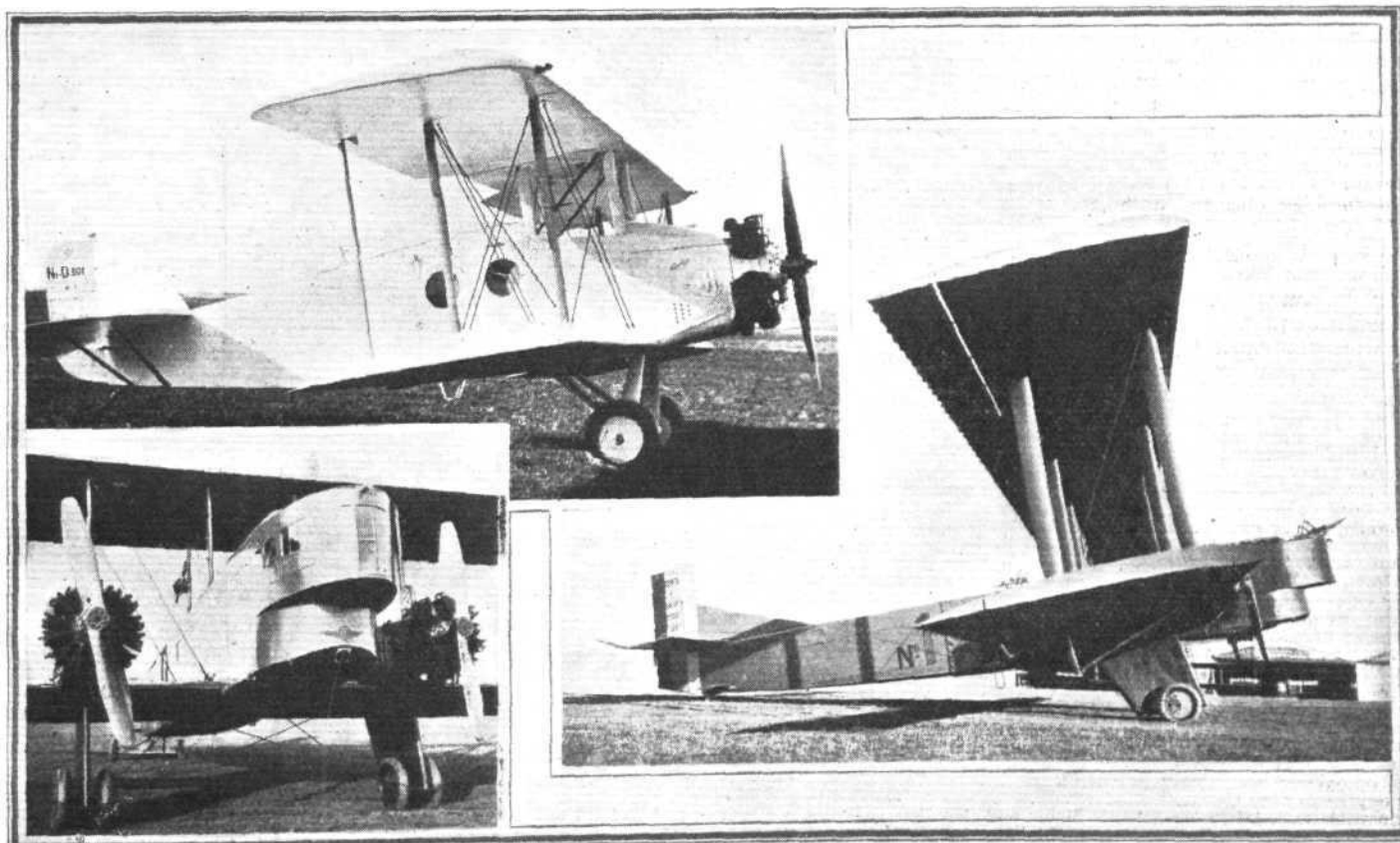
Flying Officers: J. J. T. Rose, to No. 4 Flying Training Sch., Egypt, 8.3.28. R. W. Collinson, to No. 216 Sqn., Egypt, 15.3.28. C. F. Gontcher, to No. 2 Armoured Car Company, Middle East, 9.3.28.

Medical Branch

Squadron Leaders: H. L. Burton, M.B., to Central Med. Estab., 18.2.28. C. P. Barber, to R.A.F. Base, Gosport, 23.3.28. R. W. Ryan, M.B., to No. 3, Flying Training Sch., Grantham, 6.4.28. F. E. Johnson, to Sch. of Army Co-operation, Old Sarum, 10.4.28.

Flight Lieutenants: R. L. C. Fisher, M.B., to R.A.F. Hospital, Cranwell, 5.4.28. W. D. McKeown, M.B., to No. 45 Sqn., Middle East, 6.3.28. E. J. Jenkins, to No. 216 Sqn., Middle East, 9.3.28. J. P. Hederman, to R.A.F. Depot, Uxbridge, 12.4.28. H. W. Corner, M.B., to R.A.F. Hospital, Cranwell, 12.4.28.

Flying Officers: R. J. I. Bell, to No. 111 Sqn., Sutton's Farm, 2.4.28. R. G. Freeman, to R.A.F. Officers' Hospital, Uxbridge, 26.3.28. J. O. Priestley, D.M.R.E., to Princess Mary's R.A.F. Hospital, Halton, 2.4.28. F. E. Lipscomb, to R.A.F. Station, Kenley, 2.4.28. J. Hutchieson, M.B., to R.A.F. Training Base, Leuchars, 25.3.28. J. Kemp, M.B., to Princess Mary's R.A.F. Hospital, Halton, 2.4.28. B. B. Kennedy, M.B., to R.A.F. Depot, Uxbridge, 2.4.28. J. J. MacAndrews, M.B., to Aeroplane and Armament Experimental Estab., Martlesham Heath, 2.4.28. R. F. MacLachy, M.D., to Marine Aircraft Experimental Estab., Felixstowe, 2.4.28. J. B. Murphy, M.B., to No. 1 Flying Training Sch., Netheravon, 2.4.28. J. C. Neely, B.A., to R.A.F. Station, Upper Heyford, 2.4.28. F. A. O'Connor, M.B., to R.A.F. Depot, Uxbridge, 2.4.28. Leo O'Connor, M.B., to Home Aircraft Depot, Henlow, 2.4.28. J. J. Quinlan, M.B., to R.A.F. Depot, Uxbridge, 2.4.28.



ARMSTRONG-SIDDELEY ENGINES IN FRANCE: Three well-known types of French aeroplanes in which British Armstrong-Siddeley aero-engines have been installed. At the top is the Nieuport-Delage type 391 transport machine, fitted with the 200-225 h.p. "Lynx." Below is the Farman "Goliath"—the commercial model on the left and the military type on the right—with "Jaguars."

(Concluded from page 242)

one result of this is that it is just a little awkward to get into the cockpits, as one has to step over the top longerons. There is, however, a step on the starboard side, so placed that it is used for both cockpits.

The cockpits are roomy and comfortable, and owing to the sweepback and large cut-out of the top plane, the view from both is exceptionally good. Dual controls are fitted, and the two seats rest on a box running through both cockpits.

The Armstrong-Siddeley "Genet" engine is mounted on tubes, and separated from the cockpit by a fireproof bulkhead. The petrol tank is placed in the deck fairing ahead of the front cockpit, where it gives sufficient head for gravity feed to the engine. Thus the necessity for a centre-section tank is avoided, which would be difficult to fit on the wings designed, and would moreover obstruct the view somewhat.

The undercarriage is the usual vee-type, with oleo and spiral spring "legs." The travel is about 5 ins., and the track is wide.

The main dimensions of the Parnall "Imp" are shown on the general arrangement drawings. The weight of the machine empty is 850 lbs. (386 kgs.). The loaded weight depends, of course, on the weight of the occupants, but 1,320 lbs. (600 kgs.) is given as an average figure. With the factors of safety as high as they are, the machine should be quite strong enough for any load with which it could get off. The wing area being 176 sq. ft., the wing loading is 7.5 lb./sq. ft. The top speed is approximately 102 m.p.h. (164 km./h.), and the landing speed about 40 m.p.h. (64 km./h.).

At present we do not know at what price the Parnall "Imp" will be marketed, but doubtless an announcement concerning this will be made shortly.

HIGH SPEED AND TRANS-ATLANTIC FLIGHTS

SIR SAMUEL HOARE, the Air Minister, speaking at the Birmingham Conservative Club on March 23, said that during the last week they had been discussing air questions in the House of Commons. Ten years had elapsed since the Independent Air Force was created, and Members on all sides of the House had been reviewing the position and estimating the progress achieved. This examination had shown that year by year they had made steady advance in the conquest of the air, and that within the lifetime of the youngest man in that room an invention had been successfully developed to which generation after generation through all the centuries of the past had sacrificed fruitless and unavailing effort. Year by year they were making a steady advance, but now as always, the way of human progress, had its tragic side. They were marching along the road to victory, but, as they moved forward, many a brilliant and gallant officer lost his life in the advance. Who would assess the tragedy for families, and friends, and for the country when one of those splendid young men fell by the way? Recently one such a life was lost in that sudden plunge of Flight-Lieut. Kinkead's seaplane into the Solent. In the twinkling of an eye a young and brilliant life was blotted out from human sight and ended in a second beneath the waves of the sea. When they read of so poignant a tragedy, was it any wonder that many of them ask the question: was it all worth while? Did the pursuit of speed justify the sacrifice of human life? If it was only the pursuit of speed, if it was only the breaking of a world's record that they were attempting to achieve, he would agree with those who asked that question. He would say, no world's record was worth such a sacrifice. He would say, the few miles more did not justify the loss of a single life. But let them remember that there was more at stake than an increase of speed, and that just as many of the improvements in the motor car engine were directly due to motor racing, so a definite advance in aeroplane design and in engine improvement resulted from high-speed flying. Let them, then, whilst showing their deepest sympathy with Flight-Lieut. Kinkead's family, refuse to abandon an effort that was necessary for the progress of aviation and make certain that the sacrifices of the pioneers would not have been made in vain.

He passed to the second recent dramatic tragedy, the last in the long list of trans-Atlantic tragedies. He would not say a word that would add to the sorrow of the families of Miss Mackay and Capt. Hinchcliffe. He would not say a word that would underrate the courage of the man and woman who with heavy odds against them made that great adventure. The spirit that inspired them the spirit of discovery, the spirit of emulation, the spirit of courage, made them thankful that they were British and still true to British history and British character. Let them chiefly remember the bravery that sent them to their unknown death. But if asked whether the effort was a wise one, he was bound to say, not with the object of criticising the brilliant pilot and his courageous companion, but with the sole object of warning others who might wish to follow their example, that he considered it most unwise for anyone to attempt to cross the Atlantic from east to west until we had machines of greater endurance at our disposal. The risk was at present too great, the odds too heavy against success. Should he then ask for powers to prohibit such flights altogether? Should he impose upon them conditions that would make it practically impossible for anyone at present to make any attempt? He did not believe that that was the British way of dealing with danger. He had told the House of Commons, and he told them again that night, that whilst he gravely warned pilots against the risks of flights of that kind, he did not think that it would be either wise or practicable for a Government Department to interfere with the right of any individual citizen to embark upon such an adventure. He believed that the restrictions that would be involved by Government interference were opposed to a sound British instinct. He believed that British public opinion was rightly jealous of any attempt to fetter the spirit of enterprise or even the spirit of adventure. He was certain that it would be impossible to isolate trans-Atlantic flights and that if trans-Atlantic flights were to be prohibited there must be prohibition also of adventurous attempts of every kind, whether they be by boat or motor or any other means. Moreover, he was certain also that any such attempt would prove futile in practice. How was a Government Department to be sure of the destination of a pilot when his machine left the ground? What was to be gained by a British regulation that would stop trans-Atlantic flights from British aerodromes when in a few minutes a British pilot could fly to France or Ireland and make the attempt with impunity?

He ventured to make those observations for three purposes. He wished to warn any British pilot who might contemplate making such a flight of the risks that were involved in it until we had a machine of greater endurance, and he wished to point out to the British people the difficulties in the way of Government prohibition; and thirdly, he desired to pay a tribute of respect to a courageous man and woman who, however misguided their attempt, had shown British pluck and British imagination and to offer to their families his most sincere sympathy in the tragedy that had come upon them.

R.A.E.S. AND INST.AE.E.

Official Notice

As a result of the ballot for election to Council, held on March 27, 1928, the following is a list of the Members of Council for 1928-29:—

Capt. P. D. Acland, Mr. M. L. Bramson, Mr. Griffith Brewer, Major J. S. Buchanan, Wing-Commander T. R. Cave-Browne-Cave, Mr. A. E. L. Chorlton, Mr. C. R. Fairey, Capt. F. T. Hill, Capt. A. G. Lamplugh, Major A. R. Low, Mr. W. O. Manning, Major R. H. Mayo, Lt.-Col. J. T. C. Moore-Brabazon, Lt.-Col. M. O'Gorman, Mr. F. Handley Page, Mr. T. O. M. Sopwith, Mr. H. E. Wimperis, Mr. L. A. Wingfield, Mr. R. McKinnon Wood.

The Variable Pitch Propeller.—On April 12, at the Royal Society of Arts, 18, John Street, Adelphi, W.C., at 6.30 p.m., Dr. H. S. Hele-Shaw and Mr. T. E. Beacham, will give a lecture on the Variable Pitch Propeller. The lecture will be fully illustrated, and will contain information of the results of the full-scale trials which have been carried out on this propeller. The lecturers will give a very full detailed account of the construction of the propeller and its accessories.

Flying Boats.—On Thursday, April 26, at 6.30 p.m., at the Royal Society of Arts, Herr C. Dornier will give a lecture on Flying Boats. The lecture will be fully illustrated, and probably will be accompanied by cinematograph films of the Dornier Flying Boats.

Rigid Airships.—On Thursday, May 10, Mr. B. N. Wallis will lecture before the Society at the Royal Society of Arts, at 6.30 p.m., on the Design and Construction of Modern Rigid Airships.

J. LAURENCE PRITCHARD, Secretary.

PUBLICATIONS RECEIVED

Thirteenth Annual Report of the National Advisory Committee for Aeronautics. 1927. Administrative Report, with-out Technical Reports. United States National Advisory Committee for Aeronautics, Washington, D.C., U.S.A. Price 20 cents.

Tunnard's Tanker Tables. By B. Tunnard. Brown, Son and Ferguson, Ltd., 52-58, Darnley Street, Glasgow. Price 5s. net.

Climate and Commerce. Research Department, Dorland Advertising, Ltd., Dorland House, 14, Regent Street, London, S.W.1.

Britain's Industrial Future: Being the Report of the Liberal Industrial Inquiry. Ernest Benn, Ltd., Bouverie House, Fleet Street, E.C. Price 2s. 6d. net.

Aeronautical Research Committee Reports and Memoranda: No. 1110 (M.51).—Note on Some Fatigue and Density Tests Made of Aluminium Aggregate. By H. J. Gough. June, 1927. Price 4d. net. No. 1116 (Ae. 289).—Wind Tunnel and Dropping Tests of Autogyro Models. By L. E. Caygill, B.Sc., and A. E. Woodward Nutt, B.A. Nov., 1926. Price 6d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

Air Estimates: Memorandum by the Secretary of State for Air. H.M. Stationery Office, Kingsway, London, W.C.2. Price 3d. net.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

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25,405. G. H. DOWDY and GLOSTER AIRCRAFT CO., LTD. Means for bringing aircraft to rest. (287,189.)

29,280. F. G. DIAGO. Aircraft. (276,613.)

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